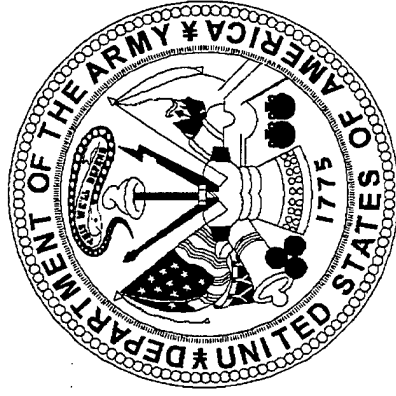


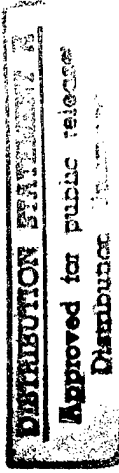
**UNCLASSIFIED**

Supporting Data FY 1999 Budget Estimate  
Submitted to Congress - February 1998

**DESCRIPTIVE SUMMARIES OF THE**



19980319 100



**RESEARCH, DEVELOPMENT, TEST AND EVALUATION**  
**Army Appropriation, Budget Activities 6 and 7**

Department of the Army  
Office of the Secretary of the Army (Financial Management and Comptroller)

**"READINESS THROUGH MODERNIZATION"**

**VOLUME III**

**UNCLASSIFIED**



UNCLASSIFIED

DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS  
OF THE  
RESEARCH, DEVELOPMENT, TEST AND  
EVALUATION, ARMY  
FY 1999  
FEBRUARY 1998

VOLUME III  
Budget Activities 6 and 7

Department of the Army  
Office of the Assistant Secretary of the Army (Financial Management and Comptroller)

DTIC QUALITY INSPECTED 3

UNCLASSIFIED

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

ii

**UNCLASSIFIED**

UNCLASSIFIED

FY 1999 RDT&E, ARMY  
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

INTRODUCTION AND EXPLANATION OF CONTENTS

**1. General.** This section has been prepared for the purpose of providing information concerning the Army Research, Development, Test and Evaluation program. The Descriptive Summaries are comprised of R-2 (Budget Item Justification Sheet) and R-3 (RDT&E Program Element/Project Cost Breakdown) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1997, 1998 and 1999 time period.

**2. Relationship of the FY 1999 Budget Submission to the FY 1998 Budget submitted to Congress.** This paragraph provides a list of program elements restructured, transitioned, or established to provide specific program identification.

**A. Program Element Restructures.** Explanations for these changes can be found in the narrative sections of the Program Element R-2/R-3 Exhibits.

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
0601102A/S13, S14	Tele-Medicine/Soldier Status	0601102A/S19
0602105A, 0602120A, 0602211A,	Army After Next (AAN) Applied	0602308A/636
0602270A, 0602303A, 0602601A,	Research	
0602622A, 0602624A, 0602709A,		
0602784A, 0602786A, 0603004A	Tele-Medicine/Advanced Technology	0602787A/869
0602787A/870, 874, 878, 879	National Defense Center for	0708045A/E31
0602720A/829	Environmental Excellence	
	Army Evaluation Center	0605716A/D302
0605601A/D699, 0605604A/D734,		
0605706A/M542	Armament Group Support	0605801A/M76
0605802A/798	Force XXI Battle Command Brigade and	0203759A/D120
0203758A/D398	Below (FBCB2)	
	Hydra 70 Engineering and	0604802A/D705
0203802A/D701	Manufacturing Development	



UNCLASSIFIED

B. FY 1999 Developmental Transitions.

<u>FROM</u>	<u>PROJECT TITLE</u>	<u>TO</u>
<u>PE/PROJECT</u>		<u>PE/PROJECT</u>
0603313A/387	Multi-Purpose Individual Munition	0604802A/284

C. Establishment of New FY 1999 Program Elements/Projects. There are no major system new starts. Minor new initiatives for FY 1999, in addition to Congressionally directed initiatives for FY 1998, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 1999 or were previously funded from other Defense appropriations.

<u>TITLE</u>	<u>PE/PROJECT</u>
Passive Millimeter Wave Camera*	0602120A/A142
Dual Use Application Program (DUAP)	0602805A/A105
Commercial Technology to Reduce Costs*	0602720A/A908
Agriculturally Based Bioremediation*	0602720A/AF26
Computer Based Land Management*	0602720A/A917
Shortstop*	0602270A/A936
Best Centers*	0602720A/821
Pollution Prevention	0602720A/895
Thermophotovoltaic Generator*	0602705A/AJ04
Air Defense Alerting Device on Bradley Stinger*	0602601A/AH72
Simulation Laboratory*	0602601A/H74
Joint Robotic Development*	0602601A/AH58
Plastic Cased Ammo*	0602624A/AJ03
Climate Change Fuel Cell Technology*	0602784A/AT46
Hardened Materials*	0602105A/AHM1
Center for Geosciences and Atmospheric Research (CGAR)*	0602784A/AT48
Orthopedic Implant Research	0602787A/D919
Prostate Cancer Research*	0602787A/D920
Ovarian Cancer Research*	0602787A/D921
Joint Tactical Radio System	0604280A/D152
Outrider Unmanned Aerial Vehicle*	0603003A/464
Trajectory Correctable Munition*	0603004A/A233
ASTAMIDS*	0603606A/A674

UNCLASSIFIED

C. Establishment of New FY 1999 Program Elements/Projects. (continued)

<u>TITLE</u>	<u>PE/PROJECT</u>
Stinger Universal Launcher*	0603003A/D448
Palletized Landing System Commercial Engine*	0603005A/A507
Metal Matrix Composites*	0603005A/A506
Volume Angiocat*	0603002A/D934
WRMAC Catheterization Lab*	0603002A/D931
Cooperative Teleradiology*	0603002A/D930
Artificial Lung Technology*	0603002A/D929
Advanced Trauma Care*	0603002A/D924
Prostate Diagnostic Image*	0603002A/D923
Emergency Telemedicine	0603002A/D922
Hypervelocity Missile TD	0603313A/A655
Commercial Operating and Support Savings Initiative (COSSI)	0604824A/D112
Auto Test Equipment Development	0604746/DL65
Combat Service Support Equipment - Engineering Development	0604804/DL43
Net Assessment Directorate	0605803A/M735
Munitions Survivability & Logistics	0605805A/D297
Tactical Unmanned Aerial Vehicle	0605204A/D114
Reliability, Maintainability and Sustainability (RMS)	0708045A/DE27

D. FY 1999 programs for which funding was shown in the FY 1998 President's Budget Submit (February 1997), but which are no longer funded.

<u>PE/PROJECT</u>	<u>TITLE</u>	<u>BRIEF EXPLANATION</u>
0602624A/H36	Fuze Technology	Program terminated
0603774A/598	LTASS	Funds transferred to system line.

UNCLASSIFIED

3. Classification. This document contains no classified data. Classified/Special Access Programs which are submitted offline are listed below.

0203735A/DC64	0602786A/AC60	0603322A
0203806A	0603003A/DB38/D391	0603710A/DC63/DC65
0203808A	0603005A/DC62/DC66	0603851A
0301359A	0603009A	0603854A/DC68
0602601A/AC83/DC84	0603013A	0604649A/DG15
0602104A	0603017A	0604328A/DC71
0602122A	0603018A	
0602712A/AC61	0603020A	

UNCLASSIFIED

UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Summary	Date: Feb 1998		
	Thousands of Dollars		
	FY 1997	FY 1998	FY 1999
Summary Recap of Budget Activities			
Basic Research	174,763	180,643	200,760
Applied Research	541,944	654,051	511,285
Advanced Technology Development	653,525	657,518	483,595
Demonstration and Validation	539,607	562,811	466,009
Engineering and Manufacturing Development	1,145,529	1,162,405	1,269,124
RDT&E Management Support	1,144,658	1,129,057	1,076,593
Operational Systems Development	715,889	678,794	773,179
Total Research Development Test & Eval Army	4,915,915	5,025,279	4,780,545

UNCLASSIFIED

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

viii

**UNCLASSIFIED**

UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army			Date: Feb 1998		
Program			Thousands of Dollars		
Line Element	Act		FY 1997	FY 1998	FY 1999
No Number		Item			
1	1	0601101A IN-HOUSE LABORATORY INDEPENDENT RESEARCH	14,108	13,678	14,902
2	1	0601102A DEFENSE RESEARCH SCIENCES	117,041	121,827	137,399
3	1	0601104A UNIVERSITY AND INDUSTRY RESEARCH CENTERS	43,614	45,138	48,459
		Basic Research	174,763	180,643	200,760
4	2	0602104A TRACTOR ROSE	2,987	0	6,000
5	2	0602105A MATERIALS TECHNOLOGY	14,339	12,415	10,137
6	2	0602120A SENSORS AND ELECTRONIC SURVIVABILITY	19,140	25,855	18,738
7	2	0602122A TRACTOR HIP	7,796	7,018	11,685
8	2	0602211A AVIATION TECHNOLOGY	20,637	22,211	29,746
9	2	0602270A EW TECHNOLOGY	14,845	18,925	16,249
10	2	0602303A MISSILE TECHNOLOGY	28,677	24,238	25,180
11	2	0602308A MODELING & SIMULATION TECHNOLOGY	20,107	20,339	27,981
12	2	0602601A COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	34,272	60,162	40,107
13	2	0602618A BALLISTICS TECHNOLOGY	39,248	40,042	31,115
14	2	0602622A CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG	2,193	3,577	5,116
15	2	0602623A JOINT SERVICE SMALL ARMS PROGRAM	4,388	9,000	5,229
16	2	0602624A WEAPONS AND MUNITIONS TECHNOLOGY	20,993	29,905	29,489
17	2	0602705A ELECTRONICS AND ELECTRONIC DEVICES	23,756	24,464	22,329
18	2	0602709A NIGHT VISION TECHNOLOGY	16,935	16,712	19,157
19	2	0602712A COUNTERMINE SYSTEMS DEVELOPMENT	7,052	10,272	10,715
20	2	0602716A HUMAN FACTORS ENGINEERING TECHNOLOGY	15,781	16,723	13,369
21	2	0602720A ENVIRONMENTAL QUALITY TECHNOLOGY	50,019	56,131	13,842
22	2	0602782A COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	13,893	16,197	19,746
23	2	0602783A COMPUTER AND SOFTWARE TECHNOLOGY	6,419	658	2,185
24	2	0602784A MILITARY ENGINEERING TECHNOLOGY	37,505	50,802	37,488
25	2	0602785A MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	9,196	8,736	8,602
26	2	602786A WARFIGHTER TECHNOLOGY	23,513	18,088	18,661
27	2	0602787A MEDICAL TECHNOLOGY	106,131	160,376	67,255
28	2	0602789A ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY	2,122	1,205	1,164
29	2	0602805A DUAL USE APPLICATIONS PROGRAM	0	0	20,000
	2	Applied Research	541,944	654,051	511,285

ix

UNCLASSIFIED

UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

Line Element	Program	No	Number	Item	Act	Thousands of Dollars		
						FY 1997	FY 1998	FY 1999
30	0603001A			WARFIGHTER ADVANCED TECHNOLOGY	3	23,211	34,361	32,969
31	0603002A			MEDICAL ADVANCED TECHNOLOGY	3	195,884	176,737	11,012
32	0603003A			AVIATION ADVANCED TECHNOLOGY	3	54,901	89,467	30,048
33	0603004A			WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	27,661	25,444	24,555
34	0603005A			COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	28,160	40,796	54,435
35	0603006A			COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	29,627	25,708	20,109
36	0603007A			MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	4,289	2,910	3,021
37	0603009A			TRACTOR HIKE	3	16,123	13,441	9,873
38	0603013A			TRACTOR DIRT	3	2,679	0	57
39	0603017A			TRACTOR RED	3	8,221	5,399	4,590
40	0603020A			TRACTOR ROSE	3	4,845	10,859	2,016
41	0603105A			MILITARY HIV RESEARCH	3	17,080	2,629	5,710
42	0603238A			AIR DEFENSE/PRECISION STRIKE TECHNOLOGY	3	19,291	12,773	9,973
43	0603270A			EW TECHNOLOGY	3	6,480	7,929	11,508
44	0603313A			MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	93,739	90,468	86,096
45	0603322A			TRACTOR GEM	3	6,123	5,991	4,408
46	0603606A			LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	26,899	31,581	21,944
47	0603607A			JOINT SERVICE SMALL ARMS PROGRAM	3	8,825	9,015	5,173
48	0603654A			LINE-OF-SIGHT TECHNOLOGY DEMO	3	9,533	4,845	20,099
49	0603710A			NIGHT VISION ADVANCED TECHNOLOGY	3	28,584	18,705	23,960
50	0603734A			MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	19,678	19,574	13,564
51	0603772A			ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	21,692	18,886	18,456
52	0603780A			SERDP/ENVIRONMENT SECURITY TECHNOLOGY PROGRAM	3	0	0	54,419
53	0604280A			JOINT TACTICAL RADIO SYSTEM	3	0	10,000	15,600
	Advanced Technology Development					653,525	657,518	483,595
54	0603018A			TRACTOR TREAD	4	2,267	0	0
55	0603308A			ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	68,205	73,304	12,240
56	0603619A			LANDMINE WARFARE AND BARRIER - ADV DEV	4	27,164	24,299	6,778
57	0603627A			SMOKE, OBSCURANT AND TARGET DEFEATING SYS-AD	4	5,573	0	0
58	0603639A			ARMAMENT ENHANCEMENT INITIATIVE	4	56,687	37,127	26,526
59	0603640A			ARTILLERY PROPELLANT DEVELOPMENT	4	8,103	8,258	0
60	0603645A			ARMORED SYSTEMS MODERNIZATION-ADVANCED DEVEL	4	1,612	1,945	0

x

UNCLASSIFIED

UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army			Date: Feb 1998		
Line Element	Program Number	Item	Act	Thousands of Dollars	
				FY 1997	FY 1998 FY 1999
61	0603649A	ENGINEER MOB EQUIP ADVANCED DEV	4	498	0
62	0603653A	ADVANCED TANK ARMAMENT SYSTEM	4	11,144	8,704
63	0603713A	ARMY DATA DISTRIBUTION SYTEM	4	25,699	20,526
64	0603745A	TACTICAL ELECTRONIC SUPPORT SYSTEMS - ADV DEV	4	3,837	0
65	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	4	6,487	7,324
66	0603766A	TAC EXPLOIT OF NAT CAP (TENCAP)-DEM/VAL TIARA	4	24,714	19,566
67	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	2,254	2,848
68	0603790A	NATO RESEARCH AND DEVELOPMENT (H)	4	9,495	8,866
69	0603801A	AVIATION - ADV DEV	4	10,648	13,696
70	0603804A	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	7,100	6,574
71	0603805A	CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	15,479	7,280
72	0603807A	MEDICAL SYSTEMS - ADV DEV	4	9,730	6,555
73	0603851A	TRACTOR EARL	4	2,922	1,851
74	0603854A	ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	232,288	314,017
75	0603856A	SCAMP BLOCK II (SPACE)	4	7,701	71
		Demonstration and Validation		539,607	562,811
76	0604201A	AIRCRAFT AVIONICS	5	17,706	31,660
77	0604220A	ARMED, DEPLOYABLE OH-58D	5	1,100	0
78	0604223A	COMANCHE	5	325,299	272,187
79	0604270A	EW DEVELOPMENT	5	69,067	84,180
80	0604321A	ALL SOURCE ANALYSIS SYSTEM	5	37,463	26,094
81	0604325A	FOLLOW-ON TO TOW	5	5,934	13,449
82	0604328A	TRACTOR EARL	5	1,484	11
83	0604604A	MEDIUM TACTICAL VEHICLES	5	5,719	3,614
84	0604609A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	0	0
85	0604611A	JAVELIN (AWWS-M)	5	5,855	7,771
86	0604619A	LANDMINE WARFARE	5	25,355	19,189
87	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	5	4,906	4,845
88	0604633A	AIR TRAFFIC CONTROL	5	7,086	4,533
89	0604640A	ADVANCED COMMAND AND CONTROL VEHICLE	5	7,545	10,532
90	0604641A	TACTICAL UNMANNED GROUND VEHICLE	5	2,728	2,604
91	0604642A	LIGHT TACTICLE WHEELED VEHICLE	5	3,409	0

UNCLASSIFIED



UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army Date: Feb 1998

Program		Thousands of Dollars			
Line	Element	Act	FY 1997	FY 1998	FY 1999
No	Number				
92	0604645A ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	6,408	0	4,500
93	0604649A ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	44,225	50,585	63,069
94	0604710A NIGHT VISION SYSTEMS - ENG DEV	5	33,970	35,052	21,311
95	0604713A COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	73,404	60,053	62,218
96	0604715A NON-SYSTEM TRAINING DEVICES - ENG DEV	5	46,142	82,965	64,035
97	0604716A TERRAIN INFORMATION - ENG DEV	5	6,969	2,825	2,999
98	0604726A INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	0	1,887	1,790
99	0604739A JTT/CIBS-M (TIARA)	5	4,588	4,360	4,447
100	0604741A AIR DEFENSE C2I - ENG DEV	5	19,577	21,181	6,476
101	0604746A AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	8,868	8,220	7,030
102	0604760A DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	17,618	20,249	2,766
103	0604766A TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	14,839	17,807	44,674
104	0604768A BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	161,583	229,389	134,858
105	0604770A JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	9,406	6,726	5,503
106	0604778A POSITIONING SYS DEVEL (SPACE)	5	417	407	379
107	0604780A COMBINED ARMS TACTICAL TRAINER (CATT)	5	29,420	12,880	7,533
108	0604801A AVIATION - ENG DEV	5	4,331	4,951	6,599
109	0604802A WEAPONS AND MUNITIONS - ENG DEV	5	21,567	14,611	37,725
110	0604804A LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	19,061	27,174	26,002
111	0604805A COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	13,315	10,710	16,404
112	0604807A MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,570	4,345	5,338
113	0604808A LANDMINE WARFARE/BARRIER - ENG DEV	5	9,342	13,818	46,905
114	0604814A SENSE AND DESTROY ARMOR - ENG DEV	5	9,677	10,847	20,813
115	0604816A LONGBOW	5	10,762	0	0
116	0604817A COMBAT IDENTIFICATION	5	16,889	19,026	13,471
117	0604818A ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	35,495	19,184	32,929
118	0604820A RADAR DEVELOPMENT	5	0	0	2,786
119	0604823A FIREFINDER	5	2,430	2,484	19,822
120	0604824A COSSI	5	0	0	33,600
121	0604854A ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	0	100
	Engineering and Manufacturing Development		1,145,529	1,162,405	1,269,124

xii

UNCLASSIFIED

UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army			Date: Feb 1998		
Program			Thousands of Dollars		
Line Element	Item	Act	FY 1997	FY 1998	FY 1999
No	Number				
122	0604256A THREAT SIMULATOR DEVELOPMENT	6	11,146	16,480	11,935
123	0604258A TARGET SYSTEMS DEVELOPMENT	6	9,661	11,328	13,127
124	0604759A MAJOR TEST & EVALUATION INVESTMENT	6	39,698	39,200	40,284
125	0605103A RAND ARROYO CENTER	6	20,550	16,534	16,718
126	0605301A ARMY KWAJALEIN ATOLL	6	140,078	120,918	142,710
127	0605326A CONCEPTS EXPERIMENTATION	6	0	0	17,441
128	0605502A SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	99,082	0	0
129	0605601A ARMY TEST RANGES AND FACILITIES	6	128,036	118,327	119,553
130	0605602A ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	20,761	32,160	33,439
131	0605604A SURVIVABILITY/LETHALITY ANALYSIS	6	29,362	31,308	30,498
132	0605605A DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	29,227	28,965	15,022
133	0605606A AIRCRAFT CERTIFICATION	6	2,415	2,828	2,924
134	0605702A METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,278	6,235	6,691
135	0605706A MATERIEL SYSTEMS ANALYSIS	6	14,006	27,755	9,711
136	0605709A EXPLOITATION OF FOREIGN ITEMS	6	6,962	7,523	4,031
137	0605712A SUPPORT OF OPERATIONAL TESTING	6	44,900	76,807	66,320
138	0605716A ARMY EVALUATION CENTER	6	0	0	25,526
139	0605801A PROGRAMWIDE ACTIVITIES	6	58,310	79,626	64,588
140	0605802A INTERNATIONAL COOPERATIVE RESEARCH AND DEV	6	1,494	0	0
141	0605803A TECHNICAL INFORMATION ACTIVITIES	6	16,465	14,673	16,251
142	0605805A MUNITIONS STANDARDIZATION EFFECTIVENESS & SAFETY	6	3,083	11,064	8,497
143	0605853A ENVIRONMENTAL CONSERVATION	6	1,874	1,723	3,195
144	0605854A POLLUTION PREVENTION	6	13,413	5,187	8,694
145	0605856A ENVIRONMENTAL COMPLIANCE-RDT&E	6	52,716	56,576	44,116
146	0605876A MINOR CONSTRUCTION (RPM) - RDTE	6	4,148	4,258	4,205
147	0605878A MAINTENANCE AND REPAIR (RPM) - RDTE	6	66,869	83,751	49,233
148	0605879A REAL PROPERTY SERVICES (RPS)	6	88,190	86,199	87,172
149	0605896A BASE OPERATIONS-RDT&E	6	217,667	224,593	230,029
150	0605898A MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	6	18,035	25,039	4,683
151	0909999A CLOSED ACCOUNT ADJUSTMENT	6	232	0	0
	RDT&E Management Support		1,144,658	1,129,057	1,076,593

xiii

UNCLASSIFIED

UNCLASSIFIED

Department of the Army  
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test &amp; Eval Army

Date: Feb 1998

Program		Thousands of Dollars			
Line	Element	Act	FY 1997	FY 1998	FY 1999
No	Number				
152	0102419A AEROSTAT JOINT PROGRAM	7	25,680	33,011	103,937
153	0203726A ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	7	37,507	37,455	35,111
154	0203735A COMBAT VEHICLE IMPROVEMENT PROGRAMS	7	203,653	161,497	94,756
155	0203740A MANEUVER CONTROL SYSTEM	7	27,166	24,510	28,923
156	0203744A AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	7	21,836	21,567	26,681
157	0203752A AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	7	3,734	2,849	2,948
158	0203758A DIGITIZATION	7	98,124	94,103	45,007
159	0203759A FORCE XXI BATTLE CMD, BRIGADE & BELOW	7	0	0	52,469
160	0203761A FORCE XXI WARFIGHTING RAPID ACQUISITION PGM	7	16,640	43,126	99,528
161	0203801A MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	7	60,882	30,443	11,252
162	0203802A OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7	13,570	1,216	1,248
163	0203806A TRACTOR RUT	7	3,030	2,046	0
164	0203808A TRACTOR CARD	7	6,588	6,373	3,993
165	0208010A JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	7	17,747	21,105	35,941
166	0208053A JOINT TACTICAL GRD STATION (TIARA)	7	2,022	5,001	12,229
167	0301359A SPECIAL ARMY PROGRAM	7	10,929	7,315	6,537
168	0303140A COMMUNICATIONS SECURITY (COMSEC) EQUIPMENT	7	3,048	11,771	7,433
169	0303142A SATCOM GROUND ENVIRO (SPACE)	7	37,665	48,939	53,897
170	0303150A ARMY GLOBAL C2 SYS	7	18,877	14,581	17,543
171	0305114A TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	7	0	728	0
172	0305128A SECURITY AND INTELLIGENCE ACTIVITIES	7	464	484	950
173	0305204A TACTICAL UNMANNED AERIAL VEHICLE	7	0	0	75,636
174	0603778A MLRS PRODUCT IMPROVEMENT PROGRAM	7	61,721	36,171	20,244
175	0708045A MANUFACTURING TECHNOLOGY	7	45,006	64,278	30,511
176	1001018A NATO JSTARS - TIARA	7	0	10,225	6,405
	Operational Systems Development		715,889	678,794	773,179
Total	Research Development Test & Eval Army		4,915,915	5,025,279	4,780,545

xiv

UNCLASSIFIED

# TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#1 - BASIC RESEARCH		
1	0601101A In-House Laboratory Independent Research	1
2	0601102A Defense Research Sciences	11
3	0601104A University and Industry Research Centers	75
#2 - APPLIED RESEARCH		
4	0602105A Materials Technology	97
5	0602120A Sensors and Electronic Survivability	101
6	0602211A Aviation Technology	111
7	0602270A Electronic Warfare (EW) Technology	121
8	0602303A Missile Technology	129
9	0602308A Modeling and Simulation Technology	135
10	0602601A Combat Vehicle and Automotive Technology	143
11	0602618A Ballistics Technology	163
12	0602622A Chemical, Smoke and Equipment Defeating Technology	173
13	0602623A Joint Service Small Arms Program	175
14	0602624A Weapons and Munitions Technology	177
15	0602705A Electronics and Electronic Devices	187
16	0602709A Night Vision Technology	195
17	0602712A Countermeasures Applied Research	199
18	0602716A Human Factors Engineering Technology	203
19	0602720A Environmental Quality Technology	209
20	0602782A Command, Control, Communications Technology	237
21	0602783A Information and Communication Technology	243
22	0602784A Military Engineering Technology	249
23	0602785A Manpower/Personnel/Training Technology	267
24	0602786A Warfighter Technology	273
25	0602787A Medical Technology	285
26	0602789A Army Artificial Intelligence Technology	313

# TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#2 - APPLIED RESEARCH - Continued		
27	0602805A Dual Use Applications Program	315
#3 - ADVANCED TECHNOLOGY DEVELOPMENT		
28	0603001A Warfighter Advanced Technology	317
29	0603002A Medical Advanced Technology	331
30	0603003A Aviation Advanced Technology	357
31	0603004A Weapons and Munitions Advanced Technology	371
32	0603005A Combat Vehicle and Automotive Advanced Technology	379
33	0603006A Command, Control and Communications Advanced Technology	393
34	0603007A Manpower, Personnel and Training Advanced Technology	407
35	0603105A Military Human Immunodeficiency Virus (HIV) Research	411
36	0603238A Air Defense/Precision Strike Technology	413
37	0603270A Electronic Warfare (EW) Technology	419
38	0603313A Missile and Rocket Advanced Technology	425
39	0603606A Landmine Warfare and Barrier Advanced Technology	449
40	0603607A Joint Service Small Arms Program	455
41	0603654A Line-of-Sight Technology Demonstration	459
42	0603710A Night Vision Advanced Technology	461
43	0603734A Military Engineering Advanced Technology	469
44	0603772A Advanced Tactical Computer Science and Sensor Technology	477
45	0603780A Strategic Environmental Research and Development Program/Environmental Security Technology	485
46	0604280A Joint Tactical Radio System	489
#4 - DEMONSTRATION AND VALIDATION		
47	0603308A Army Missile Defense Systems Integration	491
48	0603619A Landmine Warfare and Barrier - Advanced Development	501
49	0603627A Smoke, Obscurant and Target Defeating System - Advanced Development	511

# TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#4 - DEMONSTRATION AND VALIDATION - Continued		
50	0603639A Armament Enhancement Initiative	515
51	0603640A Artillery Propellant Development	523
52	0603645A Armored Systems Modernization - Advanced Development	527
53	0603649A Engineering Modification Equipment - Advanced Development	535
54	0603653A Advanced Tank Armament System	539
55	0603713A Army Data Distribution System	545
56	0603745A Tactical Electronic Support Systems - Advanced Development (TIARA)	557
57	0603747A Soldier Support and Survivability	561
58	0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	577
59	0603774A Night Vision Systems - Advanced Development	581
60	0603790A NATO Research & Development	585
61	0603801A Aviation - Advanced Development	595
62	0603804A Logistics and Engineering Equipment - Advanced Development	609
63	0603805A Combat Service Support Control Systems Evaluation and Analysis	637
64	0603807A Medical Systems - Advanced Development	647
65	0603854A Artillery Systems Advanced Development	661
66	0603856A SCAMP BLKII (SPACE)	667
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT		
67	0604201A Aircraft Avionics	671
68	0604220A Armed, Deployable OH-58D	677
69	0604223A Comanche	680
70	0604270A Electronic Warfare (EW) Development	690
71	0604321A All Source Analysis System (TIARA)	716
72	0604325A Follow-On To TOW	728
73	0604604A Medium Tactical Vehicles	732
74	0604609A Smoke, Obscurant and Target Defeating System - Engineering Development	736
75	0604611A Javelin	740

# TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued		
76	0604619A Landmine Warfare	744
77	0604622A Family of Heavy Tactical Vehicles	748
78	0604633A Air Traffic Control	754
79	0604640A Advanced Command and Control Vehicle	758
80	0604641A Tactical Unmanned Ground Vehicle	762
81	0604642A Light Tactical Wheeled Vehicle	766
82	0604645A Armored Systems Modernization (ASM) - Engineering Development	774
83	0604649A Engineer Mobility Equipment Development	780
84	0604710A Night Vision Systems - Engineering Development	792
85	0604713A Combat Feeding, Clothing, and Equipment	808
86	0604715A Non-System Training Devices - Engineering Development	834
87	0604716A Terrain Information - Engineering Development (TIARA)	846
88	0604726A Integrated Meteorological System (IMETS) (TIARA)	852
89	0604739A JTT/CIBS-M (TIARA)	856
90	0604741A Air Defense Command, Control, Intelligence - Engineering Development	860
91	0604746A Automatic Test Equipment Development	864
92	0604760A Distributive Interactive Simulations - Engineering Development	872
93	0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	886
94	0604768A Brilliant Anti-Armor (BAT) Submunition	890
95	0604770A Joint Surveillance/Target Attack Radar System	910
96	0604778A Positioning Systems Development (SPACE)	916
97	0604780A Combined Arms Tactical Trainer (CATT)	920
98	0604801A Aviation - Engineering Development	924
99	0604802A Weapons and Munitions - Engineering Development	930
100	0604804A Logistics & Engineer Equipment - Engineering Development	960
101	0604805A Command, Control, Communications Systems - Engineering Development	1002
102	0604807A Medical Materiel - Engineering Development	1020

# TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued		
103	0604808A Landmine Warfare/Barrier - Engineering Development	1034
104	0604814A Sense and Destroy Armor Munition - Engineering Development	1042
105	0604816A Longbow	1050
106	0604817A Combat Identification - Engineering & Manufacturing Development	1060
107	0604818A Army Tactical Command and Control Hardware & Software	1074
108	0604820A Radar Development	1084
109	0604823A Firefinder	1088
110	0604824A Commercial Operating & Support Savings Initiative (COSSI)	1094
111	0604854A Artillery Systems - Engineering Development	1096
#6 - MANAGEMENT AND SUPPORT		
112	0604256A Threat Simulator Development	1100
113	0604258A Target Systems Development	1102
114	0604759A Major Test and Evaluation Investment	1108
115	0605103A Rand Arroyo Center	1116
116	0605301A Army Kwajalein Atoll	1120
117	0605326A Concept Experimentation Program	1124
118	0605601A Army Test Ranges and Facilities	1126
119	0605602A Army Test Technology and Sustaining Instrumentation	1142
120	0605604A Survivability/Lethality Analysis	1150
121	0605605A DOD High Energy Laser System Test Facility (HELSTF)	1168
122	0605606A Aircraft Certification	1170
123	0605702A Meteorological Support to Research, Development, Testing & Evaluation Activities	1172
124	0605706A Materiel Systems Analysis	1176
125	0605709A Exploitation of Foreign Items	1186
126	0605712A Support of Operational Testing	1190
127	0605716A Army Evaluation Center	1206
128	0605801A Programwide Activities	1208



# TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#6 - MANAGEMENT AND SUPPORT - Continued		
129	0605802A International Cooperative Research and Development	1214
130	0605803A Technical Information Activities	1216
131	0605805A Munitions Standardization Effectiveness and Safety	1232
132	0605853A Environmental Conservation	1244
133	0605854A Pollution Prevention	1250
134	0605856A Environmental Compliance - Research, Development, Testing & Evaluation	1258
135	0605876A Minor Construction - Research, Development, Testing & Evaluation	1266
136	0605878A Maintenance and Repair - Research, Development, Testing & Evaluation	1274
137	0605879A Real Property Services (RPS)	1282
138	0605896A Base Operations - Research, Development, Testing & Evaluation	1288
139	0605898A Management Headquarters (Research and Development)	1296
#7 - OPERATIONAL SYSTEM DEVELOPMENT		
140	0102419A Aerostat Joint Program	1300
141	0203726A Advanced Field Artillery Tactical Data System	1306
142	0203735A Combat Vehicle Improvement Programs	1316
143	0203740A Maneuver Control System	1342
144	0203744A Aircraft Modifications/Product Improvement Program	1350
145	0203752A Aircraft Engine Component Improvement Program	1362
146	0203758A Digitization	1368
147	0203759A Force XXI Battle Command, Brigade and Below(FBCB2)	1374
148	0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)	1378
149	0203801A Missile/Air Defense Product Improvement Program	1392
150	0203802A Other Missile Product Improvement Programs	1404
151	0208010A Joint Tactical Communications Program (TRI-TAC)	1420
152	0208053A Joint Tactical Ground Station (TIARA)	1424
153	0303140A Communications Security (COMSEC) Equipment	1428
154	0303142A Satellite Command (SATCOM) Ground Environment	1438

# TABLE OF CONTENTS

#7 - OPERATIONAL SYSTEM DEVELOPMENT - Continued		PE	PROGRAM ELEMENT TITLE	PAGE
155	0303150A		Army Global Command and Control System (AGCCS)	1466
156	0305114A		Joint Precision Approach Landing System (JPALS)	1472
157	0305128A		Security and Intelligence Activities	1474
158	0305204A		Tactical Unmanned Aerial Vehicles	1478
159	0603778A		Multiple Launch Rocket System Product Improvement Program	1480
160	0708045A		Army Industrial Preparedness Manufacturing Technology	1498
161	1001018A		NATO Joint STARS	1510

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Advanced Command and Control Vehicle	0604640A	758
Advanced Field Artillery Tactical Data System	0203726A	1306
Advanced Tactical Computer Science and Sensor Technology	0603772A	477
Advanced Tank Armament System	0603653A	539
Aerostat Joint Program	0102419A	1300
Air Defense Command, Control, Intelligence - Engineering Development	0604741A	860
Air Defense/Precision Strike Technology	0603238A	413
Air Traffic Control	0604633A	754
Aircraft Avionics	0604201A	671
Aircraft Certification	0605606A	1170
Aircraft Engine Component Improvement Program	0203752A	1362
Aircraft Modifications/Product Improvement Program	0203744A	1350
All Source Analysis System (TIARA)	0604321A	716
Armament Enhancement Initiative	0603639A	515
Armed, Deployable OH-58D	0604220A	677
Armored Systems Modernization - Advanced Development	0603645A	527
Armored Systems Modernization (ASM) - Engineering Development	0604645A	774
Army Artificial Intelligence Technology	0602789A	313
Army Data Distribution System	0603713A	545
Army Evaluation Center	0605716A	1206
Army Global Command and Control System (AGCCS)	0303150A	1466
Army Industrial Preparedness Manufacturing Technology	0708045A	1498
Army Kwajalein Atoll	0605301A	1120
Army Missile Defense Systems Integration	0603308A	491
Army Tactical Command and Control Hardware & Software	0604818A	1074

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Army Test Ranges and Facilities	0605601A	1126
Army Test Technology and Sustaining Instrumentation	0605602A	1142
Artillery Propellant Development	0603640A	523
Artillery Systems - Engineering Development	0604854A	1096
Artillery Systems Advanced Development	0603854A	661
Automatic Test Equipment Development	0604746A	864
Aviation - Advanced Development	0603801A	595
Aviation - Engineering Development	0604801A	924
Aviation Advanced Technology	0603003A	357
Aviation Technology	0602211A	111
Ballistics Technology	0602618A	163
Base Operations - Research, Development, Testing & Evaluation	0605896A	1288
Brilliant Anti-Armor (BAT) Submunition	0604768A	890
Chemical, Smoke and Equipment Defeating Technology	0602622A	173
Comanche	0604223A	680
Combat Feeding, Clothing, and Equipment	0604713A	808
Combat Identification - Engineering & Manufacturing Development	0604817A	1060
Combat Service Support Control Systems Evaluation and Analysis	0603805A	637
Combat Vehicle and Automotive Advanced Technology	0603005A	379
Combat Vehicle and Automotive Technology	0602601A	143
Combat Vehicle Improvement Programs	0203735A	1316
Combined Arms Tactical Trainer (CATT)	0604780A	920
Command, Control and Communications Advanced Technology	0603006A	393
Command, Control, Communications Systems - Engineering Development	0604805A	1002
Command, Control, Communications Technology	0602782A	237

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Commercial Operating & Support Savings Initiative (COSSI)	0604824A	1094
Communications Security (COMSEC) Equipment	0303140A	1428
Concept Experimentation Program	0605326A	1124
Countermine Applied Research	0602712A	199
Defense Research Sciences	0601102A	11
Digitization	0203758A	1368
Distributive Interactive Simulations - Engineering Development	0604760A	872
DOD High Energy Laser System Test Facility (HELSTF)	0605605A	1168
Dual Use Applications Program	0602805A	315
Electronic Warfare (EW) Technology	0603270A	419
Electronic Warfare (EW) Technology	0602270A	121
Electronic Warfare (EW) Development	0604270A	690
Electronics and Electronic Devices	0602705A	187
Engineer Mobility Equipment Development	0604649A	780
Engineering Modification Equipment - Advanced Development	0603649A	535
Environmental Compliance - Research, Development, Testing & Evaluation	0605856A	1258
Environmental Conservation	0605853A	1244
Environmental Quality Technology	0602720A	209
Exploitation of Foreign Items	0605709A	1186
Family of Heavy Tactical Vehicles	0604622A	748
Firefinder	0604823A	1088
Follow-On To TOW	0604325A	728
Force XXI Battle Command, Brigade and Below(FBCB2)	0203759A	1374
Force XXI Warfighter Rapid Acquisition Program (WRAP)	0203761A	1378
Human Factors Engineering Technology	0602716A	203

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
In-House Laboratory Independent Research	0601101A	1
Information and Communication Technology	0602783A	243
Integrated Meteorological System (IMETS) (TIARA)	0604726A	852
International Cooperative Research and Development	0605802A	1214
Javelin	0604611A	740
Joint Precision Approach Landing System (JPALS)	0305114A	1472
Joint Service Small Arms Program	0603607A	455
Joint Service Small Arms Program	0602623A	175
Joint Surveillance/Target Attack Radar System	0604770A	910
Joint Tactical Communications Program (TRI-TAC)	0208010A	1420
Joint Tactical Ground Station (TIARA)	0208053A	1424
Joint Tactical Radio System	0604280A	489
JTT/CIBS-M (TIARA)	0604739A	856
Landmine Warfare	0604619A	744
Landmine Warfare and Barrier - Advanced Development	0603619A	501
Landmine Warfare and Barrier Advanced Technology	0603606A	449
Landmine Warfare/Barrier - Engineering Development	0604808A	1034
Light Tactical Wheeled Vehicle	0604642A	766
Line-of-Sight Technology Demonstration	0603654A	459
Logistics & Engineer Equipment - Engineering Development	0604804A	960
Logistics and Engineering Equipment - Advanced Development	0603804A	609
Longbow	0604816A	1050
Maintenance and Repair - Research, Development, Testing & Evaluation	0605878A	1274
Major Test and Evaluation Investment	0604759A	1108
Management Headquarters (Research and Development)	0605898A	1296

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Maneuver Control System	0203740A	1342
Manpower, Personnel and Training Advanced Technology	0603007A	407
Manpower/Personnel/Training Technology	0602785A	267
Materials Technology	0602105A	97
Materiel Systems Analysis	0605706A	1176
Medical Advanced Technology	0603002A	331
Medical Materiel - Engineering Development	0604807A	1020
Medical Systems - Advanced Development	0603807A	647
Medical Technology	0602787A	285
Medium Tactical Vehicles	0604604A	732
Meteorological Support to Research, Development, Testing & Evaluation Activities	0605702A	1172
Military Engineering Advanced Technology	0603734A	469
Military Engineering Technology	0602784A	249
Military Human Immunodeficiency Virus (HIV) Research	0603105A	411
Minor Construction - Research, Development, Testing & Evaluation	0605876A	1266
Missile and Rocket Advanced Technology	0603313A	425
Missile Technology	0602303A	129
Missile/Air Defense Product Improvement Program	0203801A	1392
Modeling and Simulation Technology	0602308A	135
Multiple Launch Rocket System Product Improvement Program	0603778A	1480
Munitions Standardization Effectiveness and Safety	0605805A	1232
NATO Joint STARS	1001018A	1510
NATO Research & Development	0603790A	585
Night Vision Advanced Technology	0603710A	461
Night Vision Systems - Advanced Development	0603774A	581

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Night Vision Systems - Engineering Development	0604710A	792
Night Vision Technology	0602709A	195
Non-System Training Devices - Engineering Development	0604715A	834
Other Missile Product Improvement Programs	0203802A	1404
Pollution Prevention	0605854A	1250
Positioning Systems Development (SPACE)	0604778A	916
Programwide Activities	0605801A	1208
Radar Development	0604820A	1084
Rand Arroyo Center	0605103A	1116
Real Property Services (RPS)	0605879A	1282
Satellite Command (SATCOM) Ground Environment	0303142A	1438
SCAMP BLKII (SPACE)	0603856A	667
Security and Intelligence Activities	0305128A	1474
Sense and Destroy Armor Munition - Engineering Development	0604814A	1042
Sensors and Electronic Survivability	0602120A	101
Smoke, Obscurant and Target Defeating System - Advanced Development	0603627A	511
Smoke, Obscurant and Target Defeating System - Engineering Development	0604609A	736
Soldier Support and Survivability	0603747A	561
Strategic Environmental Research and Development Program/Environmental Security Technology	0603780A	485
Support of Operational Testing	0605712A	1190
Survivability/Lethality Analysis	0605604A	1150
Tactical Electronic Support Systems - Advanced Development (TIARA)	0603745A	557
Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	0603766A	577
Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	0604766A	886
Tactical Unmanned Aerial Vehicles	0305204A	1478



# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Tactical Unmanned Ground Vehicle	0604641A	762
Target Systems Development	0604258A	1102
Technical Information Activities	0605803A	1216
Terrain Information - Engineering Development (TIARA)	0604716A	846
Threat Simulator Development	0604256A	1100
University and Industry Research Centers	0601104A	75
Warfighter Advanced Technology	0603001A	317
Warfighter Technology	0602786A	273
Weapons and Munitions - Engineering Development	0604802A	930
Weapons and Munitions Advanced Technology	0603004A	371
Weapons and Munitions Technology	0602624A	177

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0604256A Threat Simulator Development								D976	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D976	Army Threat Simulator Program	11146	16480	11935	14009	14309	16864	16856	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification:</b> This program finances the design, fabrication, integration and fielding of realistic mobile threat simulators in support of Army training and developmental/operational testing. It provides the capabilities required to create realistic simulated tactical environments essential to user training and weapon system testing. Each capability is pursued in concert with the others so as to avoid duplication while providing the proper mix of test resources needed to support both Army and Tri-Service testing requirements. The development of the XM17S will be initiated in FY 98. The XM17S simulator represents an advanced air defense system for testing of U.S. weapon systems. It is highly mobile and very effective against low altitude targets and supports all U.S. electronic countermeasures development and operational tests including tactics evaluation. This is the only proposed simulation of a multiple target tracking system with enhanced low-altitude performance. This system is a very high value battlefield target and the simulator will support targeting evaluation as well as threat testing. The Army Threat Simulator Program (ATSP) is a continuing program which finances development of realistic mobile threat simulators for Army test organizations. These battlefield simulators represent systems (e.g. missile systems; command, control and communications systems; electronic warfare systems; helicopters; etc.) that are used to portray a realistic threat environment during testing of U.S. weapon systems. Simulator development is responsive to Office of the Secretary of Defense and General Accounting Office concerns that the Army conduct operational testing in a realistic threat environment. Initially created to develop simulators of Soviet equipment, the changing world order has expanded the scope of this program to address rest of world (ROW) threats. Actual threat equipment is being acquired when appropriate in lieu of development. Total package fielding will still be required (i.e., instrumentation, operations and maintenance, manuals, new equipment training, etc.). Threat simulator development is accomplished under the auspices of the Project Manager for Instrumentation, Targets, and Threat Simulators (PM ITTS), and CROSSBOW, which is administered by the Director for Test, Systems Engineering and Evaluation, Office of the Secretary of Defense (OSD). These affiliations eliminate any duplication within the U.S. Army or Department of Defense (DoD). Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 5843 Continued development of XM15A/S Air Defense System</li> <li>• 1717 Completed development of the XM330ES Advanced/Electronic Combat Systems.</li> <li>• 1050 Developed an Advanced/Land Combat System the low energy laser XMDEWS hardware simulator.</li> <li>• 2536 Continued development of regimental elements of XMC3S for the Battle Management Network.</li> </ul> <p>Total 11146</p>											

Project D976

Page 1 of 2 Pages

Exhibit R-2 (PE 0604256A)

1100

Item 112

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																						
<b>6 - Management and Support</b>	<b>0604256A Threat Simulator Development</b>		<b>D976</b>																				
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1292 Complete development of XM15A/S Air Defense System.</li> <li>• 1657 Develop XM70A Surface-to-Air Missile System.</li> <li>• 5734 Develop XM17S short-to-medium range SAM Air Defense System.</li> <li>• 1657 Continue development of XMDEWS Advanced Land Combat System.</li> <li>• 2794 Continue development of regimental elements of XMC3S for the Battle Management Network.</li> <li>• 3000 Develop Distributed Compatible Interactive Simulation Radar</li> <li>• 346 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 16480</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 7499 Continue development of XM17S Air Defense System.</li> <li>• 2488 Continue development of XMDEWS Advanced Land Combat Systems.</li> <li>• 1948 Continue development of regimental elements of XMC3S for the Battle Management Network.</li> </ul> <p>Total 11935</p> <p>THREAT SIMULATOR Test Programs Supported: Aircraft Survivability Equipment (ASE) (ALQ-36) (APR-39) Special Electronics Missions Aircraft (SEMA) ASE Force Development Test and Evaluation (FDTE); Unmanned Aerial Vehicle (UAV) Short Range Initial Operational Test and Evaluation (IOTE); Block 11A Ground Station Module (GSM) IOTE; SEMA ASE (ALQ-136 Radar Jammer); AN/APRA (XE-2) Advanced Threat Radar Warning Receiver, SEMA; 155MM and Multiple Launch Rocket System (MLRS) - Sense And Destroy Armor (SADARM); Special Operations (Special mission aircraft for performance and survivability test); Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) (Light) FDTE; MLRS SADARM IOTE; Guardrail Common Sensor; OH-58D Kiowa Scout Attack Helicopter; Patriot Product Improvement Program (PIP); MH-60K; Firefinder; RAH-66; UAV - Close Range; Longbow Apache; Forward Area Air Defense (FAAD) C3I; Army Tactical Missile System (ATACMS); AN/ALQ-136; Joint Surveillance Target Attack Radar Systems (JSTARS); XM1106 Smoke Generating System; SEMA/ASE; Suite of Integrated Infrared Countermeasures (SIIRCM), and Suite of Integrated Radio Frequency Countermeasures (SIRFCM).</p>																							
<p><b>B. Project Change Summary</b></p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>11383</td> <td>14004</td> <td>11877</td> </tr> <tr> <td>Appropriated Value</td> <td>11627</td> <td>17004</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-481</td> <td>-524</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>11146</td> <td>16480</td> <td>11935</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 1998 increase (+3000) is the result of Congressional plus-up.</p>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	11383	14004	11877	Appropriated Value	11627	17004		Adjustments to Appropriated Value	-481	-524		FY 1999 President's Budget	11146	16480	11935
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	11383	14004	11877																				
Appropriated Value	11627	17004																					
Adjustments to Appropriated Value	-481	-524																					
FY 1999 President's Budget	11146	16480	11935																				

Project D976

Page 2 of 2 Pages

Exhibit R-2 (PE 0604256A)

1101

Item 112

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY				PE NUMBER AND TITLE									
6 - Management and Support				0604258A Target Systems Development									
COST (In Thousands)				FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost				9661	11328	13127	12934	14178	16234	14927	Continuing	Continuing	
D238 Aerial Targets				6395	6416	5595	5696	6278	6799	6609	Continuing	Continuing	
D459 Ground Targets				3266	4912	7532	7238	7900	9435	8318	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This program funds aerial and ground target hardware and software target development, maintenance and upgrade. The overall objective is to allow validation of weapon system accuracy and reliability by developing aerial and ground targets essential for Test and Evaluation (T&E). These targets are economical and expendable, remote controlled or stationary, and often destroyed in use. The Army is the Tri-Service lead under Reliance for providing both rotary wing, mobile ground and assigned legacy targets for test and evaluation. The Army executes development of some Service-peculiar target requirements in support of quality assurance, lot acceptance and training; and continues development of Service-peculiar and previously begun target materiel to maintain continuity. Funding for this program includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0604258A Target Systems Development								D238	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D238 Aerial Targets		6395	6416	5595	5696	6278	6799	6609	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification: Project D238 - Aerial Targets:</b> Provides for development, acquisition, operation, storage, update, and maintenance of realistic surrogate or acquired threat high-performance, multi-spectral aerial targets that can fully stress the latest air defense and air-to-air weapons. Modern weapons require test, evaluation, and training using threat representative aerial targets to assess their effectiveness on the battlefield. This program encompasses a family of rotary and fixed-wing targets, full-scale, miniature and subscale targets, tactical ballistic targets, ancillary devices, and remote control systems. To stress systems under test, aerial targets must have flight characteristics, signatures, and other performance factors which emulate the modern threat. This tasking includes long-range planning to determine future target needs and development of coordinated requirement documents; the management of target research, development, test and evaluation process; execution of the validation process to ensure that surrogate targets adequately represent the threat; development and acquisition of surrogate and acquired targets; and continuing maintenance, storage, and development/enhancements/update engineering services of the developed and acquired threat targets to ensure availability for the Test and Evaluation (T&amp;E) customer. The US Army is the Reliance lead for rotary wing targets and the Tri-Service lead for procurement and enhancement of the MQM-107 Fixed Wing Target.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2190 Continued development of HOKUM-X Rotary wing Target (Canadian Cooperative Program).</li> <li>1095 Continued enhancement of the MQM-107 Target System, including updating of obsolete parts and improved engine performance.</li> <li>1503 Continued development of Universal Drone Control System (UDCS), including integration into AH-1 helicopter.</li> <li>717 Continued enhancement of the Target Tracking and Control System (TTCS), including conversion of data panels to graphic CRTs and development of multi-target capability.</li> <li>570 Continued development, enhancement, maintenance, and storage for all RDT&amp;E aerial targets, towed targets and ancillary devices.</li> <li>320 Developed aerial virtual targets activities. Includes models of HOKUM-X and AH-1 variants.</li> <li>Total 6395</li> </ul>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2699 Continue development of HOKUM-X Rotary Wing (Canadian Cooperative Program).</li> <li>951 Continue enhancement of the MQM-107 Target System, including updating of obsolete parts and improved airframe maneuverability.</li> <li>1007 Complete development of Universal Drone Control System (UDCS).</li> <li>583 Continue development of the Target Tracking and Control System (TTCS), including development of GPS target positioning system.</li> <li>853 Continue development, enhancement, maintenance, and storage for all RDT&amp;E aerial targets, towed targets and ancillary devices.</li> <li>166 Continue development of aerial virtual targets, including models of HOKUM-X and AH-1 variants.</li> <li>157 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 6416</li> </ul>											
Project D238											

Page 2 of 5 Pages

Exhibit R-2 (PE 0604258A)

1103

Item 113

UNCLASSIFIED

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b> February 1998
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>	<b>PROJECT</b>
<b>6 - Management and Support</b>	<b>0604258A Target Systems Development</b>	<b>D238</b>

**FY 1999 Planned Program:**

- 1018 Complete baseline configuration and initiate update for HOKUM-X Rotary Wing Target (Canadian Cooperative Program) to include integration of UDS Drone kits.
- 987 Continue enhancement of the MQM-107 Target system, including updating of obsolete parts to maintain producibility and supportability, and improved airframe maneuverability to meet the aerodynamic performance and payload capability needed by the Army, Tri-Service, and FMS customers.
- 536 Initiate integration of Universal Drone Control System (UDCS) into additional targets (e.g., UH-1 Target).
- 782 Continue enhancement of the Target Tracking and Control System (TTCS), including update of RMX operating system to more supportable system.
- 645 Continue development, enhancement, maintenance, and storage for all RDT&E aerial targets, towed targets and ancillary devices.
- 502 Continue development of aerial virtual targets, including models of MQM-107 and its variants.
- 14 Perform study for development of Future Aerial Targets, and Low Cost Control Systems.
- 1111 Develop UAV-S Target.
- 5595
- Total**

**AERIAL TARGETS Test Programs Supported:** Forward Area Air Defense (FAAD) Missile (Stinger), Patriot, Medium Extended Air Defense System (MEADS), Non-Line-Of-sight (NLOS) enhanced Fiber Optic Guided Missile (EFOGM), Comanche, and under Reliance; helicopter targets for the Air force and Navy and technology programs which demand accurate threat representation in their aerial target.

	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	6564	6620	5567
Appropriated Value	6706	6620	
Adjustments to Appropriated Value	-311	-204	
FY 1999 President's Budget	6395	6416	5595

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0604258A Target Systems Development								D459	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D459	Ground Targets	3266	4912	7532	7238	7900	9435	8318	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification:</b> Project D459 – Ground Targets: This program funds Army efforts to support Test and Evaluation (T&amp;E) of advanced weapon systems by developing surrogates and acquiring foreign equipment, and developing virtual target computer models of ground vehicle targets. These computer models are compatible with Distributed Interactive Simulation (DIS) and will be Higher Level Architecture (HLA) compliant. These products are required to adequately stress weapons systems undergoing test and evaluation. This tasking includes long-range planning to determine future target needs and development of coordinated requirement documents; the centralized management, storage, and development/enhancement/update engineering services of the developed and acquired targets to ensure availability for test and evaluation customers. Project also manages use of current assets and operates centralized spare parts program. The US Army is the Tri-Service lead for providing ground targets for test and evaluation. The increase in FY 99 provides the ground target surrogate vehicles required to support Comanche and BAT testing in the FY00-FY02 timeframe. These up-to-date threat representative ground targets are acquired at a greatly reduced unit cost over buying the authentic Russian vehicles.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 1632 Managed and provided oversight for Primary Operating Centers operation, storage, maintenance, configuration management and repair of Ground Targets assets including acquisition of new material and spare parts.</li> <li>• 129 Continued validation, accreditation, and certification and configuration controls/studies of ground targets and development/execution of safety and environmental plans.</li> <li>• 414 Continued development of virtual ground targets to support test and evaluation. Initiate development of a configuration control plan for the virtual target models which have been developed to date and for those to be developed. Target models will be utilized in Virtual Proving Ground activities and other weapon systems T&amp;E and Modeling and Simulation (M&amp;S) activities.</li> <li>• 870 Completed the development and testing of initial BMP3-S prototype armored infantry vehicle.</li> <li>• 221 Completed concept exploration of a Main Battle Tank Surrogate.</li> <li>Total 3266</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1911 Manage and provide oversight for Primary Operating Centers operation, storage, maintenance, configuration and repair of Ground Targets assets including acquisition of new material and spare parts.</li> <li>• 139 Continue validation, accreditation, and certification and configuration controls/studies of ground targets and development/execution of safety and environmental plans.</li> </ul>											

Project D459

Page 4 of 5 Pages

Exhibit R-2 (PE 0604258A)

1105

Item 113

UNCLASSIFIED

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b> February 1998
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>	<b>PROJECT</b>
<b>6 - Management and Support</b>	<b>0604258A Target Systems Development</b>	<b>D459</b>

**FY 1998 Planned Program: (continued)**

- 1312 Continue development of virtual ground targets to support T&E. Develop two new virtual target models of a classified target and the BMP3-Surrogate target for use by developers and testers. Continue development and initiate implementation of configuration control plan for virtual targets. These target models will be utilized in Virtual Proving Ground activities and other weapon systems T&E and M&S activities.
- 851 Develop and prototype a Main Battle Tank Surrogate.
- 579 Complete development of second BMP-3S prototype.
- 120 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 4912

**FY 1999 Planned Program:**

- 1748 Manage and provide oversight for Primary Operating Centers operation, storage, maintenance, configuration management of repair of Ground Targets assets including acquisition of new material and spare parts.
- 190 Continue validation, accreditation, and certification and configuration controls/studies of ground targets and development/execution of safety and environmental plans.
- 1854 Continue development of virtual ground targets to support test and evaluation. Implement configuration control and initiate validation efforts. Target models will be utilized in Virtual Proving Ground and other weapon systems T&E and M&S activities.
- 1265 Continue development and prototype of a Main Battle Tank surrogate.
- 2475 Complete testing of BMP3-S and fabricate and deploy, into the operational fleet, 10 BMP3-S Ground Target Surrogates to maintain up-to-date threat representative targets which are required to support Comanche and BAT T&E in the FY00 and FY-02 timeframe.
- Total 7532

**GROUND TARGETS Test Programs Supported:** Ground Targets efforts are investments which enable Department of Defense (DoD) customers to conduct appropriate developmental and operational testing, evaluation and training in the future. Weapon systems for which these developments are required include: Comanche, Longbow, Close Combat Anti-Armor Weapon System (CCAWS), Wide Area Munitions (WAM), Non-Line of Sight (NLOS) Enhanced Fiber Optic Guided Missile (EFOGM), Line-Of-Sight Antitank (LOSAT), Army Tactical Missile System (Army TACMS), Brilliant Anti-Armor Submunition (BAT), Unmanned Aerial Vehicle, (UAV-SR), Short Range Anti-Armor Weapon System (SRAW), Javelin, Sense and Destroy Armor (SADARM).

**B. Project Change Summary**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
FY 1998/1999 President's Budget	3352	5068	7496
Appropriated Value	3423	5068	
Adjustments to Appropriated Value	-157	-156	
FY 1999 President's Budget	3266	4912	7532

Project D459

Page 5 of 5 Pages

Exhibit R-2 (PE 0604258A)

1106

Item 113

**UNCLASSIFIED**



**THIS PAGE INTENTIONALLY LEFT BLANK**

1107

Item 113

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY										PE NUMBER AND TITLE	
6 - Management and Support										0604759A Major Test and Evaluation Investment	
COST (In Thousands)											
Total Program Element (PE) Cost											
D983	Major Test & Evaluation - USAKA										
D984	Major Technical Test Instrumentation										
D986	Major User Test Instrumentation										
<b>Mission Description and Budget Item Justification:</b> This program funds development and acquisition of major developmental test instrumentation for the U. S. Army Test and Evaluation Command (TECOM) test activities including Major Ranges and Test Facility Bases (MRTFB): White Sands Missile Range (WSMR), NM; Yuma Proving Ground, (YPG), AZ; Aberdeen Test Center (ATC), MD; Dugway Proving Ground (DPG), UT; and US Army Kwajalein Atoll (USAKA), Marshall Islands (which is managed by the U.S. Army Space and Missile Defense Command). Program also funds development and acquisition of major field instrumentation for U. S. Army Operational Test and Evaluation Command (OPTEC) test organizations. Requirements for instrumentation are identified through a long range survey of project managers; Research, Development and Engineering Centers (RDECs); and Battle Laboratories developing future weapon systems and the test programs required for these systems. Army testing facilities are also surveyed to determine current testing capability shortfalls. This PE is appropriate to Budget Activity 6 because it includes research and development effort directed toward support of installations or operations required for general research and development use.											
	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
	39698	39200	40284	40265	41961	49348	55902	Continuing	Continuing		
	2315	2355	7142	7086	4163	4145	4106	Continuing	Continuing		
	30595	33450	30562	28365	30732	36009	42134	Continuing	Continuing		
	6788	3395	2580	4814	7066	9194	9662	Continuing	Continuing		

Page 1 of 8 Pages

Exhibit R-2 (PE 0604759A)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0604759A Major Test and Evaluation Investment								D983	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D983	Major Test & Evaluation - USAKA	2315	2355	7142	7086	4163	4145	4106	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification: Project D983 - Major Test and Evaluation (T&amp;E) Investment - USAKA:</b> This project funds the purchase of major Improvement and Modernization (I&amp;M) equipment at the US Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands. USAKA/KMR is a national test range supporting Army, Ballistic Missile Defense Organization (BMDO), US Air Force, National Aeronautics and Space Administration (NASA), and other customers. Upgrades to telemetry, optics, command/control and other equipment are required to maintain USAKA as a national test range. FY 1999-2000 increase supports the KMR Modernization project - Remoting Roi Operations which is a concurrent, range-wide modernization effort to maximize the use of common, standardized Commercial Off-The-Shelf (COTS) technology to replace obsolete components; implement common hardware/software architectures and automation; and "remote" the operation of range sensors and instrumentation to the island of Kwajalein. This effort will upgrade range capabilities that are critical to the success of upcoming Theater Missile Defense (TMD) and National Missile Defense (NMD) test missions as well as reduce USAKA/KMR annual operating costs by \$17M per year beginning in FY02. These savings are already reflected in USAKA PE 0605301A.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1754 Advanced Research Project Agency-Lincoln C-Band Observable Radar (ALCOR) Computer/Receiver Upgrade. The ALCOR computer/receiver upgrade is required to improve performance, increase system reliability and reduce maintenance costs.</li> <li>561 Kwajalein Missile Range (KMR) Impact Scoring System: Completed KMR Impact Scoring System (KMISS), an underwater hydroacoustic system which replaces the unsupportable splash detection radars. This system will support the Air Force Minuteman III and Peacekeeper Operational Testing.</li> </ul> <p>Total 2315</p>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2296 Kwajalein Missile Range (KMR) Modernization - Remoting Roi Operations. All radar signal processing and recording projects will be consolidated into a single common open architecture using general purpose COTS hardware to enable remote operations and maintenance by matrixed technicians. The Kiernan Reentry Measurement Site (KREMS) radars, the AN/FPQ-19 radar, and telemetry will be remoted to the Kwajalein Mission Control Center (KMCC) where automated remote operation will be performed. Transportable optics will be used to supplement current KMR optics. The KMR Range Safety Center will be consolidated into the KMCC.</li> <li>59 Small Business Innovative Research/Small Business Technology Transfer Program.</li> </ul> <p>Total 2355</p>											
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>7142 Continue KMR Modernization - Remoting Roi Operations, which is critical to upcoming TMD/NMD test missions. Remoting Roi Operations will reduce USAKA/KMR operating costs by \$17M per year.</li> </ul> <p>Total 7142</p> <p>Project D983</p>											

Exhibit R-2 (PE 0604759A)

Page 2 of 8 Pages

1109

Item 114

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
<b>6 - Management and Support</b>		<b>0604759A Major Test and Evaluation Investment</b>	<b>D983</b>
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	2373	2430	2427
Adjustments to Appropriated Value	2423	2430	
FY 1999 President's Budget	-108	-75	
	2315	2355	7142
Change Summary Explanation: Funding: FY99-Increase of (+4715) supports the Kwajalein cost reduction initiative, Remoting Operations.			

Project D983

Page 3 of 8 Pages

Exhibit R-2 (PE 0604759A)

1110

Item 114

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE					PROJECT					
6 - Management and Support		0604759A Major Test and Evaluation Investment					D984					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D984	Major Technical Test Instrumentation	30595	33450	30562	28365	30732	36009	42134	Continuing	Continuing		
<p><b>A. Mission Description and Budget Item Justification: Project D984 - Major Technical Test Instrumentation:</b> This project develops and acquires major test instrumentation to perform developmental testing of weapon systems at U. S. Army Test and Evaluation Command (TECOM) activities. Major instrumentation is defined as having one or more of the following attributes: joint-service requirements, multiple command use, high visibility, large dollar value, produces a new capability or requires intensive management during acquisition. The Test Support Network (TSN) will provide complete secure coverage of automated and integrated voice, data and video in a single transport system; provide advanced encryption capabilities and remote control for switching capabilities for test configuration and total network data arrangement control. The Land Combat Instrumentation (LCI) provides for upgrade and expansion for Aberdeen Test Center's (ATC) suite of instrumentation required for performance testing of combat and tactical vehicles, advanced armor concepts, and advanced munitions. The Fiber Optic Network (FON) provides ATC instrumented test areas with high-speed communication links to other test facilities and to central data processing/evaluation. The Frequency Surveillance System (FSS) will replace and provide remote capabilities to daily operations for surveillance of the radio frequency spectrum used at White Sands Missile Range (WSMR) in support of all Services and non-DoD agencies.. The Dynamic Infrared Scene Projector (DIRSP) will conduct performance testing of night vision sensors and Infrared (IR) imaging seekers, and will provide the capability to fully simulate and synthesize present and future battlefields with a mix of real and simulated objects at Redstone Technical Test Center (RTTC) centers. The Hardened Subminiature Telemetry and Sensor System (HSTSS) is developing, miniaturizing, and hardening an instrumentation/telemetry package that will provide continuous direct measurement of internal functioning and flight data for cannon-launched munitions, smart submunitions, and small missiles/rockets. The Range Digital Transmission System (RDTS) will improve test operations and will reduce test costs allowing for efficient data collection and remote operations at YPG.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2530 Concluded the Army's portion of the GPS production contract for all Army test organizations.</li> <li>223 Concluded enhancements to databases and data handling capabilities for system level ATCCS Technical Control Center (TCC) EPLRS, and SINCGARS technical test at EPG.</li> <li>10435 Completed the 2nd segment and nearing completion of the 3rd segment of the Eastern Fiber Optic Backbone of Phase I of TSN. Continued installation of the Network Management System (NMS). Continued inside plant hardware site surveys for seven major nodes.</li> <li>4875 Completed installation of PTA instrumentation, completed laser illuminator system, completed Barricade B2 and B3 range instrumentation, and completed development of vehicle on-board data acquisition and sensors for LCI at ATC. Started upgrade to Hi Velocity Range and Barricade C.</li> <li>1498 Completed the instrumentation of the TW II Link, high-speed networking, and Ethernet hub. Completed Hi Velocity Range installation. Continued Secure the FON for classified data transmission at ATC.</li> <li>4771 Awarded contract for FSS modernization project at WSMR. Purchased equipment for WSMR control center and Jess remote site.</li> <li>4040 Continued development of the DIRSP project at RTTC, designing critical subsystems and conducting Preliminary Design Review (PDR) and Critical Design Review (CDR).</li> <li>2085 Completed Test Capabilities and Benefits Analysis (TCBA), and system specification for HSTSS. Conducted Milestone I/II in-process review.</li> </ul>												

Project D984

Page 4 of 8 Pages

Exhibit R-2 (PE 0604759A)

1111

Item 114

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support		D984	
FY 1997 Accomplishments continued:			
• 138	Started developing the statement of work and system specification for Range Digital Transmission system.		
Total	30595		
FY 1998 Planned Program:			
• 10024	Complete installation and acceptance testing of the NMS and initiate the system integration and testing (software qualification) of the NMS which will support the Initial Operating Capability (IOC) for the WSMR TSN. Complete Phase I of the Eastern Fiber Optic Backbone. Complete inside plant hardware site surveys and install inside plant hardware for the four major nodes on the green ring.		
• 2727	Continue Barricade C and Hi Velocity range instrumentation; continue installation of automotive communication network at Churchville test area, and start direct fire imager development for LCI at Aberdeen Test Center.		
• 1404	Complete installation of fiber optic data link to Mainfront, Michaelsville, Fords Farm, AAS, and Poverty Island testing ranges for FON at ATC. Also complete securing the fiber optic network.		
• 10608	Install, integrate, test and perform site acceptance of equipment for FSS at WSMR control center and Jess remote site. Purchase equipment for Holloman control center, Higbie remote site and Sacramento Peak remote site.		
• 3570	Start fabrication of full up system, and start system integration for the DIRSP project at RTTC.		
• 4258	Released request for proposal (RFP). Started source selection activities for Data Acquisition System, GPS/IMU Systems and Packaging Studies. Award multiple EMD contracts for HSTSS instrumentation for indirect/direct fire projectiles and small missiles/medium caliber munitions in support of Yuma Proving Ground (YPG) and the Army Research Lab (ARL). Release multiple RFPs and begin source selection activities for the EMD contract for HSTSS instrumentation .		
• 50	Complete development of the statement of work and system specification for Range Digital Transmission System.		
• 809	Small Business Innovative Research/Small Business Technology Transfer Programs.		
Total	33450		
FY 1999 Planned Program:			
• 14900	Complete Phase I to include inside plant hardware installation for the three major nodes on the pink ring, system integration and testing to support IOC and install breakout and feeder sites to support Phase II efforts of WSMR TSN.		
• 250	Continue installation of Automotive Communication Network at Churchville test area at Aberdeen Test Center.		
• 6874	Install, integrate, test and perform site acceptance of equipment for FSS at White Sands Missile Range Holloman control center, Higbie remote site and Sacramento Peak remote site for FSS. Purchase equipment for Ft Bliss and Kirtland remote sites.		
• 3781	Complete DIRSP system integration and testing to meet IOC and field system to RTTC.		
• 4147	Complete source section activities and award multiple EMD contracts for Data Acquisition System and GPS/IMU Systems in support of HSTSS instrumentation for indirect/direct fire projectiles and small missiles/medium caliber munitions.		
• 610	Initiate installation of digital fiber optic cable to support Phase I of RDTSS for the Yuma Cibola western test ranges.		
Total	30562		
Project D984		Exhibit R-2 (PE 0604759A)	
		Page 5 of 8 Pages	

Project D984

Page 5 of 8 Pages

Exhibit R-2 (PE 0604759A)

1112

Item 114

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management and Support</b>	<b>0604759A Major Test and Evaluation Investment</b>		<b>D984</b>
<b>B. Project Change Summary</b>	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>
FY 1998/1999 President's Budget	31504	34515	28412
Appropriated Value	32197	34515	
Adjustments to Appropriated Value	-1602	-1065	
FY 1999 President's Budget	30595	33450	30562
<p>Change Summary Explanation: Funding: FY 1998 Adjustments to Appropriated Value reflect Undistributed Congressional Reductions of \$1065K. FY 1999 increase (+2000) supports the final installation and acceptance of Phase I of the WSMR TSN effort; (+150) funds reprogrammed to fund higher priority requirements.</p>			

Project D984

Page 6 of 8 Pages

Exhibit R-2 (PE 0604759A)

1113

Item 114

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE					PROJECT				
6 - Management and Support		0604759A Major Test and Evaluation Investment					D986				
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D986 Major User Test Instrumentation		6788	3395	2580	4814	7066	9194	9662	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification: Project D986 - Major User Test Instrumentation:</b> This project finances the development of major field instrumentation for Operational Testing (OT), Force Development Testing and Experimentation (FDTE), and Army Warfighting Experiments (AWE). Each initiative set forth in this program element is directly tied to tactical systems that support each of the five Army Modernization Objectives: Project &amp; Sustain; Protect The Force; Win Information War; Conduct Precision Strikes; and Dominate The Maneuver Battle. Cornerstone is the Mobile Automated Instrumentation Suite (MAIS) that provides users a high fidelity, realistic, real-time capability to measure the performance of hardware and personnel under tactical conditions for large-scale operations (up to 1830 players). The MAIS will instrument combat systems in the operational forces to provide encrypted Real Time Casualty Assessment (RTCA) and Time, Space, and Positioning Information (TSPI) data. The MAIS system and its data are the tools that will enable objective assessments for new materiel acquisition, force structuring, doctrine and tactics modification, and, through the High Level Architecture (HLA) Protocol Data Unit (PDU) format provide data to validate the future DoD warfighting models and simulations, bridge the test analysis centers, and link multi-Service test and training exercises. The MAIS, a non-major system acquisition, achieved Milestone I/II in FY90. Current program (one control center and 131 player units) reaches IOC in FY97. One additional control center and 469 player units are programmed in Other Procurement, Army. Beginning in FY 97, enhancements to the MAIS program are Mobile Integrated Non-Intrusive Command, Control and Communications Instrumentation (MINI C3I). The MINI C3I system assesses the 21st Century's Armed Forces' ability to employ digital technology to obtain greater performance standards in lethality, survivability and tempo. It provides essential audio, video, and digital information required for credible testing of command, control, and communications systems. Beginning in FY98 a MAIS Pre-Planned Product Improvement (P3I) program will be initiated with instrumentation packages for the Longbow Apache helicopter, Comanche, Crusader, Bradley Slinger, Smart Weapons/Munitions, and Land Warrior weapons. MAIS P3I will provide insertion of enhancements to the RTCA algorithms; simulation of Opposing Force (OPFOR) weapons systems and player units for newly acquired weapons systems; and develop player units for the Comanche, Crusader, smart weapons, and antitank missile systems. These system enhancements are required as part of the basic program enabling the operational test community to effectively emulate current and future battlefield weapons in a high fidelity environment. The P3I program will develop and integrate additional weapon systems and capabilities to improve the fidelity and robustness of the MAIS system.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>3028 Supported system Developmental and Operational Testing for MAIS.</li> <li>1654 Executed MAIS product refurbishment and component obsolescence program.</li> <li>850 Developed design alternatives for a MAIS interface to the AGES-II system implementation for the AH-64D Apache Longbow weapon system.</li> <li>770 Designed and fabricated for MINI C3I a miniature Field Data Collectors (FDC) to support Army Force XXI design decisions and operational test and experiments.</li> <li>486 Instrumented two additional mobile command and control vehicles for MINI C3I, each vehicle to include necessary instrumentation and hardware to collect digital, video and audio data to support the Command Post Exercise portion of the Division Army Warfighting Experiment supporting Force XXI.</li> </ul> <p>Total 6788</p> <p>Project D986</p>											

Exhibit R-2 (PE 0604759A)

Page 7 of 8 Pages

1114

Item 114

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0604759A Major Test and Evaluation Investment</b>	<b>D986</b>																					
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2977 Complete MAIS product refurbishment and component obsolescence. Design, develop, and implement the MAIS P3I program, specifically the Javelin Surrogate, Dismounted Troop miniaturization and the Digital M1A2 and M2A3 system interfaces, critical to conducting realistic weapon system operational testing and force development testing.</li> <li>• 350 Expand the capability for MINI C3I to monitor and test Command and Control Vehicles from 4 to 8. Replace currently obsolete mass storage units.</li> <li>• 68 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> </ul> <p>Total 3395</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2580 Continue to execute the MAIS P3I program, specifically design and develop rotary wing player units for the Comanche, Bradley Stinger, Stinger weapons and enhance RTCA algorithms all in support of conducting realistic weapon system operational testing and force development testing.</li> </ul> <p>Total 2580</p> <p><b>Project Change Summary</b></p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>6956</td> <td>3504</td> <td>2568</td> </tr> <tr> <td>Appropriated Value</td> <td>7105</td> <td>3504</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-317</td> <td>-109</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>6788</td> <td>3395</td> <td>2580</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	6956	3504	2568	Appropriated Value	7105	3504		Adjustments to Appropriated Value	-317	-109		FY 1999 President's Budget	6788	3395	2580
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	6956	3504	2568																				
Appropriated Value	7105	3504																					
Adjustments to Appropriated Value	-317	-109																					
FY 1999 President's Budget	6788	3395	2580																				

Project D986

Page 8 of 8 Pages

Exhibit R-2 (PE 0604759A)

1115

Item 114

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE							PROJECT		
6 - Management and Support		0605103A Rand Arroyo Center							D732		
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D732	Arroyo Center Support	20550	16534	16718	16868	17017	17137	17194	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification:</b> This program funds the RAND Arroyo Center, the Department of the Army's Federally Funded Research and Development Center (FFRDC) for studies and analysis, which has operated at RAND since FY 1985. The Arroyo Center draws its researchers from RAND's staff of approximately 600 professionals trained in a broad range of disciplines. About 90 percent of RAND's staff are located at the corporate headquarters in Santa Monica, California; the remainder are based at RAND's Washington D.C. office. The RAND Arroyo Center provides for continuing analytical research across a broad spectrum of issues and concerns, which are grouped in four major research areas: Strategy and Doctrine; Military Logistics; Manpower and Training; and Force Development and Technology. The RAND Arroyo Center research agenda is primarily focused on mid/long-term concerns. Results and analytical findings directly impact senior leadership deliberations on major issues. Arroyo Center research is sponsored by the Secretary of the Army, the Assistant Secretaries, the Chief of Staff and Vice Chief of the Army, the Deputy Chiefs of Staff of the Army, and most of the Army's major commands. The Arroyo Center is provided guidance from the Army through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army (Research, Development, and Acquisition). The ACPC reviews, monitors, and approves the annual Arroyo Center research plan as well as all individual research projects. Each project requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis. RAND Arroyo provides the Army with a unique multidisciplinary capability for independent analysis. Although the Arroyo Center staff works with analysts in the Army's internal study program, the Arroyo Center is an independent organization that provides analysis for both the Army and the broader national security community. Work in this program element is consistent with the resource constrained Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and Project Reliance. This program supports decisionmaking and resource allocation for general research and development and, since it is not allocated to a specific R&amp;D mission, it is appropriately funded in Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 766 Research addressing innovative ways to acquire affordable technologies.</li> <li>• 4166 Research addressing development and modernization, including ways to develop enhanced battle command decisionmaking; what communication technologies are required for the digital battlefield for Force XXI and the Army After Next (AAN); how to improve the Army's ability to analyze, model, and simulate the effects of information operations; assessing the potential of current, planned, and future capabilities for joint Operations Other Than War (OOTW) and wartime urban operations to decide which technology-based initiatives should be supported; assessing the utility of advanced technology system concepts for improving light-force capability; and providing help in developing Army guidance that will lead to an improved level of joint interoperability.</li> <li>• 3221 Research addressing Army planning, including providing a framework for thinking about how the Army should organize to facilitate future expansion; identifying investment and organizational development strategies to prepare for conflict with an Weapons of Mass Destruction (WMD) - armed adversary; measuring the effectiveness of an information-age Army; identifying strategies to maximize long-term effectiveness of forces deployed to various lesser conflicts; providing strategic analysis of the AAN winter war game; and determining the nature of sound intelligence support to long-range planning.</li> </ul>											

Project D732

Page 1 of 4 Pages

Exhibit R-2 (PE 0605103A)

1116

Item 115

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605103A Rand Arroyo Center	D732	
<p><b>FY 1997 Accomplishments: (continued)</b></p> <ul style="list-style-type: none"> <li>• 1365 Research addressing manning the force, including identifying policies to manage personnel turbulence and minimize its detrimental effects on costs and readiness; developing and testing incentives to reduce reserve component personnel turbulence, thereby increasing unit readiness; and identifying and evaluating options for the Army to enhance efficiency in staffing and resourcing the ROTC program.</li> <li>• 2760 Research addressing training the force, including examining ways to improve the efficiency and performance of the Total Army School System; designing and recommending new and more flexible techniques for providing and managing training resources in schools; designing and testing next systems of training CSS command and control, focusing on improved use of simulation and exercises; analyzing ways to strengthen and modernize the system for educating and developing noncommissioned officers to meet the demands of the 21<sup>st</sup> century Army; and enhancing training of heavy combat units by developing more effective ways to use simulations.</li> <li>• 1189 Research addressing the security environment, including providing new metrics to better assess state power in the information age; applying previously developed model of ethnic conflict and state breakdown to real-world case studies; and producing a range of plausible unification scenarios for the Koreans, focusing on both the military operational and broader regional implications of each.</li> <li>• 6125 Research addressing logistics initiatives, including helping the Army to develop and implement specific process improvements and institutionalize the capability to sustain continuous process improvement; improving CONUS and OCONUS order and ship processes; increasing responsiveness of the repair cycle process; improving the stockage determination process; improving the quality and usability of financial information needed for logistics decisionmaking; improving the deployment process for logistics capabilities; supporting Army efforts to field an integrated communications and information system for logistics to support both day-to-day operations and logistics command functions in garrison and in theater; and identify types of savings that can be accrued from implementing improvements to the logistics processes.</li> <li>• 958 Research done by the Warfighting Analysis Integration Center (WAIC) addressing analysis support for the Quadrennial Defense Review and the National Defense Panel.</li> </ul> <p>Total 20550</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1416 Research addressing the Army in national strategy, including identifying unique and significant Army contributions to the execution of future national military strategy; identifying the strength of the case for a stronger land-force emphasis in future U.S. engagement operations; conducting a parametric assessment of how costs affect Army expandability issues; and understanding the processes by which states translate sustained economic growth into military power.</li> <li>• 1297 Research addressing improving the Army PPBE System, including developing and extending strategies for streamlining the processes; extending assumption-based planning; developing strategic concepts and planning processes to revitalize long-range strategic planning; developing new analytic tools to support the development of strategic resource alternatives; assessing the appropriateness of the current programming structure used by DoD; and providing and integrating operational and institutional guidance for the programming phase of Army PPBS.</li> </ul>			
Project D732		Exhibit R-2 (PE 0605103A)	
Page 2 of 4 Pages		Item 115	

1117

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605103A Rand Arroyo Center	D732	
FY 1998 Planned Program: (continued)			
• 2948	Research addressing Force XXI and Army After Next, including assisting the senior Army leadership in informing and influencing thinking in the broader defense community on operational concepts and technological applications for future forces; assisting in the design of the AAN winter and summer wargames; examining potential tactical and technological counters to the rapid force projection initiative system-of-systems concept; providing assistance in developing Army guidance leading to an improved level of joint and NATO interoperability; and developing concepts to explore U.S. military capabilities to conduct joint OOTW and wartime operations on urban terrain.		
• 1838	Research addressing the Army and its Title X responsibilities, including identifying near-term resourcing and management actions to sustain recruiting and reduce the force, and conducting a meta-analysis of existing and developing visions and strategic plans for logistics in 2005-2015 and beyond.		
• 3568	Research addressing shaping and staffing the force, including designing and testing new systems of training CSS command and control, focusing on improved use of simulations and exercises; enhancing training of heavy combat units by developing more effective ways to use simulations; developing an objective, longitudinal system as a tool for assessing proficiency on collection and individual tasks performed at CTCs; strengthening and modernizing the system for developing and educating NCOs; testing and evaluating alternative ROTC staff programs; and maintaining training effectiveness and readiness of Army units in the face of varying levels of OPTEMPO and PERSTEMPO.		
• 1449	Research addressing exploration of future force and technology alternatives, including maintaining science and technology capability necessary to meet AAN mission needs in period of reducing R&D funding; identify opportunities for exploiting information technologies by Army forces and reducing vulnerabilities to an adversary's use of information warfare; investigating current staff responsibilities for the management of the C2 Protect program; and improving the Army's ability to model, simulate, and analyze issues regarding the knowledge-based Army.		
• 3604	Research addressing reshaping support functions and infrastructure, including adjustments to the Army's price and credit policies to support logistics initiatives; identifying types of savings that can be accrued from implementing improvements; improving the quality and usability of financial information needed for logistics decisionmaking; improving the Army's CONUS and OCONUS order and ship processes; sizing and configuring stocks at all echelons to meet operational requirements responsively with lowest dollar investment; developing and implementing specific process improvements to sustain continuous process improvement; and increasing effectiveness and efficiency of logistics deployment capabilities.		
• 414	Small Business Research/Small Business Technology Transfer Programs		
Total	16534		
FY 1999 Planned Program:			
• 1468	Research on the Army in national strategy		
• 1346	Research on improving the Army PPBES system		
• 3057	Research on Force XXI and Army After Next		
• 1906	Research on the Army and its Title X responsibilities		
• 3700	Research on shaping and staffing the force		
• 1503	Research on exploring of future force and technology alternatives		
• 3738	Research on reshaping support functions and infrastructure		
Total	16718		
Project D732			
Exhibit R-2 (PE 0605103A)			

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY			
6 - Management and Support		0605103A Rand Arroyo Center	D732
PE NUMBER AND TITLE			
B. Project Change Summary			
FY 1997	FY 1998	FY 1999	
21108	17576	18040	
21763	17576		
-1213	-1042		
20550	16534	16718	
<p>Change Summary Explanation: Funding: FY99 decrease (-1890) reprogrammed to higher priority requirements.</p>			
Project D732		Exhibit R-2 (PE 0605103A)	

Project D732

Page 4 of 4 Pages

1119

Item 115

UNCLASSIFIED

UNCLASSIFIED

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT				
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		0605301A Army Kwajalein Atoll		February 1998		D614				
6 - Management and Support										
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D614 US Army Kwajalein Atoll		140078	120918	142710	142509	133693	130490	134329	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) is a remote (located in the republic of the Marshall Islands), secure activity of the Major Range and Test Facility Base as constituted by DoD Directive 3200.11. Its function is to support test and evaluation of major Army and DoD missile systems, Army Space surveillance and object identification, and National Aeronautics and Space Administration (NASA) scientific and space programs. Programs supported include Army missile defense, Ballistic Missile Defense Organization (BMDO) demonstration/validation tests, Air Force Intercontinental Ballistic Missile (ICBM) development and operational tests, U.S. Space Surveillance Network, and NASA Space Transportation System (Shuttle) and orbital debris experiments. USAKA/KMR supports the Missile Defense Act of 1991 to put in place a Ground Based Defense System by 2006 or earliest date possible. The technical element of USAKA/KMR is the Kwajalein Missile Range which consists of a number of sophisticated, one-of-a-kind, radar, optical, telemetry, command/control/communications, and data reduction systems. These systems include the four unique radars of the Kiernan Reentry Measurement Site (KREMS); super Recording Automatic Digital Optical Tracker (RADOT) long range video-metric tracking systems, high density data recorders for high data-rate telemetry, and sonobuoy missile impact location system data analysis and reduction hardware and software. USAKA/KMR is contractor operated and is therefore totally dependent upon its associated support contractors. Program also provides funds for the contractors to accomplish installation operation and maintenance (O&M). The lean O&M funding for FY 1998 resulted in the delay of critical repair and replacement of facilities and equipment. The FY 1999-2000 funding increase provides for the minimum level of USAKA/KMR O&M as well as continuation of the KMR Modernization project - Remoting Roi Operations. The Remoting Roi Operations project is a concurrent, range-wide modernization effort to maximize the use of common, standardized Commercial Off-The-Shelf (COTS) technology to replace obsolete components; implement common hardware/software architectures and automation; and "remote" the operation of range sensors and instrumentation to the island of Kwajalein. This project will upgrade range capabilities that are critical to the success of upcoming Theater Missile Defense (TMD) and National Missile Defense (NMD) test missions as well as reduce USAKA/KMR annual operating costs by \$17M per year beginning in FY02. These savings are already reflected in USAKA's funding for FY2001-2003. The Army, Air Force, Navy and BMDO have programs planned which have significant test and data gathering requirements at USAKA/KMR. Air Force programs require firing at full range with complete data collection during late mid course and terminal trajectory. BMDO programs require range sensors to collect technical data in support of National Missile and Theater Missile Defense programs being conducted at USAKA/KMR. These test data cannot be obtained except through the use of technical facilities available on and in the vicinity of USAKA/KMR. Data collection on objects in space remains significant because the Advanced Research Project Agency (ARPA) Long-Range Tracking and Instrumentation Radar (ALTAIR), located at USAKA/KMR, is one of only three sensors world-wide that has deep-space tracking capability. Programs supported include Air Force programs Peacekeeper, Minuteman III, and Delta; Army/BMDO's Strategic Target System (STARS), Multi-Service Launch System (MSLS), Midcourse Space Experiment (MSX), Missile Defense Critical Measurements Program, Theater High Altitude Air Defense (THAAD), Patriot, and ground-based radar; NASA's Space Transportation System (STS), Orbital Debris Measurement Program, Small Expendable Deployer System and Orbital Debris Radar Calibration Spheres, along with the Air Force Space and Missile Center's associated programs. Funding is in support of site installations or operations required for general research and development, not allocable to specific R&D missions. This type of activity is appropriately funded in Budget Activity 6.

Project D614

Page 1 of 3 Pages

Exhibit R-2 (PE 0605301A)

1120

Item 116

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605301A Army Kwajalein Atoll</b>	<b>D614</b>	
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>7946 Provided management support (salaries, training, travel, SMDC matrix support, etc.).</li> <li>9169 Accomplished maintenance and repair projects.</li> <li>17291 Procured POL and MILSTRIP.</li> <li>5009 Procured other mission operating supplies.</li> <li>6180 Provided air and sea transportation (cargo to and from continental United States).</li> <li>38992 Continued to support Army, BMDO, NASA, and Air Force developmental and operational missile testing. Continued integration of range technical support contract effort. Initiated KMR modernization program (Remoting ROI).</li> <li>55591 Provided logistical support to self contained islands of USAKA.</li> <li>Total 140078</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>8099 Provide management support (salaries, training, travel, SMDC matrix support, etc.).</li> <li>1900 Accomplish maintenance and repair projects.</li> <li>14907 Procure POL and MILSTRIP.</li> <li>3300 Procure other mission operating supplies.</li> <li>5879 Provide air and sea transportation (cargo to and from continental United States).</li> <li>34563 Continue to support Army, BMDO, NASA, and Air Force developmental and operational missile testing. Continue integration of range technical support contract effort. Complete design phase of KMR modernization program (Remoting ROI) and begin fabrication and software coding.</li> <li>49396 Provide logistical support to self contained islands of USAKA.</li> <li>2874 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> <li>Total 120918</li> </ul>			

Project D614

Page 2 of 3 Pages

Exhibit R-2 (PE 0605301A)

1121

Item 116

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT																				
<b>6 - Management and Support</b>	<b>0605301A Army Kwajalein Atoll</b>		<b>D614</b>																				
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>8095 Provide management support (salaries, training, travel, SMDC matrix support, etc.).</li> <li>9929 Accomplish maintenance and repair projects.</li> <li>17468 Procure POL and MILSTRIP.</li> <li>5112 Procure other mission operating supplies.</li> <li>6248 Provide air and sea transportation (cargo to and from continental United States).</li> <li>39479 Continue to support Army, BMDO, NASA, and Air Force developmental and operational missile testing. Continue integration of range technical support contract effort. Continue fabrication and software coding for KMR modernization program in preparing for installation.</li> <li>56379 Provide logistical support to self contained islands of USAKA.</li> <li>Total 142710</li> </ul> <p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>143789</td> <td>138769</td> <td>142125</td> </tr> <tr> <td>Appropriated Value</td> <td>146864</td> <td>124769</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-6786</td> <td>-3851</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>140078</td> <td>120918</td> <td>142710</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 1998 decrease of (-17851); Congressional reduction (-14000) plus (-3851) for Undistributed Congressional reductions.</p>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	143789	138769	142125	Appropriated Value	146864	124769		Adjustments to Appropriated Value	-6786	-3851		FY 1999 President's Budget	140078	120918	142710
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	143789	138769	142125																				
Appropriated Value	146864	124769																					
Adjustments to Appropriated Value	-6786	-3851																					
FY 1999 President's Budget	140078	120918	142710																				

Project D614

Page 3 of 3 Pages

Exhibit R-2 (PE 0605301A)

1122

Item 116

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

1123

Item 116

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																	
6 - Management and Support		0605326A Concept Experimentation Program								D308																	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																	
D308	Concept Experimentation Program	0	0	17441	17580	17697	18465	18704	Continuing	Continuing																	
<p><b>A. Mission Description and Budget Item Justification:</b> Project D308 - Concept Experimentation Program: This is not a new start. Starting in FY 1999 the funds were realigned from PE 0605712A, Project D985. The Concept Experimentation Program (CEP) is a key innovative tool which provides TRADOC battle labs and schools the ability to capitalize on emerging technologies, emerging warfighting concepts, and new materiel initiatives. Program growth reflects increased emphasis on Force XXI initiatives and accelerated acquisition methods. Funds are used to acquire, lease or fabricate equipment to conduct experiments to determine military utility or potential to satisfy Army Doctrine, Training, Leader Development, Organization, Materiel and Soldiers (DTLOMS) needs. TRADOC battle labs build on initiatives with greatest potential payoff. Program is also used as a first look at emerging technologies and emerging warfighting concepts that have the potential to support the Army's Force XXI design needs. As the Army moves toward Force XXI, the critical task of designing the force around information requires major investment in information-age capabilities. Constructive, virtual, and live simulations are used to examine warfighting concepts across DTLOMS domains. They cover all aspects of command and control, lethality, survivability, and tempo and are essential to technology insertion in future Army systems and force structure.</p> <p>Additionally, this project will fund continued Force XXI experimentation in accordance with the Joint Venture Experiment Campaign Plan. This plan will serve as the blueprint for experimentation to fine tune the organization of the First Digitized Division and First Digitized Corps</p> <p><b>FY 1997 Accomplishments:</b> Program funded under PE 0605712A, Project D985.</p> <p><b>FY 1998 Planned Program:</b> Program funded under PE 0605712A, Project D985.</p> <p><b>FY 1999 Planned Program:</b> Concepts to be conducted in FY 99 will be nominated during the summer 1998. They will be evaluated by the TRADOC Concept Experimentation Program Schedule and Review Committee (CEPSARC) during Aug/Sep 1998. The FY 99 concept experiments will be approved in Sep/Oct 1998. Approval during the year of execution allows proponents (Battle Labs, Schools, TOE Units, etc.) to submit proposals for up to date ideas and technology for evaluation.</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>10541</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>17441</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1999 increase (+6900) reprogrammed to fund approved experimentation.</p>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	10541	Adjustments to Appropriated Value				FY 1999 President's Budget	0	0	17441
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																								
Appropriated Value	0	0	10541																								
Adjustments to Appropriated Value																											
FY 1999 President's Budget	0	0	17441																								

Project D308

Page 1 of 1 Pages

Exhibit R-2 (PE 0605326A)

1124

Item 117

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1125

Item 117

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

## 0605601A Army Test Ranges and Facilities

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	128036	118327	119553	119882	121679	121889	123255	Continuing	Continuing
DF30 Army Test Ranges & Facilities	0	116031	119553	119882	121679	121889	123255	Continuing	Continuing
DE90 Yuma Proving Ground	18086	0	0	0	0	0	0	0	0
DE91 Aberdeen Test Center	31042	0	0	0	0	0	0	0	0
DE93 White Sands Missile Range	64470	0	0	0	0	0	0	0	0
D618 Aviation Technical Test Center	9306	0	0	0	0	0	0	0	0
D630 TECOM Test Design and Evaluation	4024	0	0	0	0	0	0	0	0
D632 Redstone Technical Test Center	1108	0	0	0	0	0	0	0	0
D699 Non-Major Sys Test Design and Evaluation	0	2296	0	0	0	0	0	0	0

NOTE: Effective FY 1999, funding in Project D699, Non-major Systems Test Design & Evaluation, has been transferred to newly established PE 0605716A Army Evaluation Center under OPTEC to perform the Army's newly consolidated developmental and operational evaluation function.

**Mission Description and Budget Item Justification:** Sustains an objective test capability for technical testing and support to operational testing of DoD materiel, weapons and weapons systems from concept through production within the acquisition cycle at three Major Range and Test Facility Bases: Yuma Proving Ground, AZ; Aberdeen Test Center, Aberdeen Proving Ground, MD; and White Sands Missile Range, NM. This program also sustains an objective technical test capability at: Aviation Technical Test Center, Fort Rucker AL; Redstone Technical Test Center, Redstone Arsenal, AL; Electronic Proving Ground, Fort Huachuca, AZ; Cold Regions Test Center, Forts Greely and Wainwright, AK; Tropic Test Site, Panama; and a capability to provide for integrated test planning plus safety assessment/verification. Technical test capabilities at each test range have been uniquely established, are in place to support independent test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, and quality of materiel in development and in production. Program funding includes efforts toward leveraging technologies to include procurement of essential equipment, personnel training and facility modernization to support the warfighter's testing requirements. It also provides for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs. Current testing capabilities are not duplicated within DoD and they represent baseline requirements to assure acceptable risk to the soldier as new technologies emerge into fielded weapons systems. As part of the DoD RELIANCE initiative, the Army (via This program) has committed at the highest senior service levels

Page 1 of 15 Pages

Exhibit R-2 (PE 0605601A)

1126

Item 118

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b>	<b>February 1998</b>
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>		
<b>6 - Management and Support</b>	<b>0605601A Army Test Ranges and Facilities</b>		
<p>to be the lead agency for ground vehicles, gun munitions, electric guns, and surface-to-air missiles. This initiative is currently supported by the services Vice Chiefs of Staff in their role as the T&amp;E Board of Directors. This program finances indirect test operating costs not billable to test customers, replacement of test equipment and test facility modernization projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. This program does not finance reimbursable costs directly identified to a user of these ranges. These direct costs are borne by materiel developers and project/product managers in accordance with DoD Directive 3200.11. T&amp;E operations are required for general research and development; therefore, This program is appropriate for inclusion in Budget Activity 6.</p>			

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605601A Army Test Ranges and Facilities								DF30	
	COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DF30 Army Test Ranges & Facilities		0	116031	119553	119882	121679	121889	123255	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Sustains an objective test capability for technical testing and support to operational testing of DoD materiel, weapons and weapons systems from concept through production within the acquisition cycle at three Major Range and Test Facility Bases: Yuma Proving Ground, AZ; Aberdeen Test Center, Aberdeen Proving Ground, MD; and White Sands Missile Range, NM. This program also sustains an objective technical test capability at: Aviation Technical Test Center, Fort Rucker AL; Redstone Technical Test Center, Redstone Arsenal, AL; Electronic Proving Ground, Fort Huachuca, AZ; Cold Regions Test Center, Forts Greely and Wainwright, AK; Tropic Test Site, Panama; and a capability to provide for integrated test planning plus safety assessment/verification. Technical test capabilities at each test range have been uniquely established, are in place to support independent test and evaluation (T&amp;E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, and quality of materiel in development and in production. Program funding includes efforts toward leveraging technologies to include procurement of essential equipment, personnel training and facility modernization to support the warfighter's testing requirements. It also provides for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs. Current testing capabilities are not duplicated within DoD and they represent baseline requirements to assure acceptable risk to the soldier as new technologies emerge into fielded weapons systems. As part of the DoD RELIANCE initiative, the Army (via this program) has committed at the highest senior service levels to be the lead agency for ground vehicles, gun munitions, electric guns, and surface-to-air missiles. This initiative is currently supported by the services Vice Chiefs of Staff in their role as the T&amp;E Board of Directors. This program finances indirect test operating costs not billable to test customers, replacement of test equipment and test facility modernization projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. This program does not finance reimbursable costs directly identified to a user of these ranges. These direct costs are borne by materiel developers and project/product managers in accordance with DoD Directive 3200.11. T&amp;E operations are required for general research and development; therefore, This program is appropriate for inclusion in Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b> See projects funded under DE90, DE91, DE93, D618, D632 and that portion of D630 which provided for command-wide integrated test planning and safety assessment/verification.</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>112681 Command-wide integrated test planning, safety assessment/verification and test operations (previously funded under DE90, DE91, DE93, D618, D630, and D632). Involvement in over 760 Integrated Product Team efforts and issuance of over 350 safety releases and over 100 safety confirmations is projected on both major and non-major acquisition programs/experiments. Some of the major systems to be tested include: Wide Area Mine (HORNET) at Yuma Proving Ground (YPG), Naval Ship Structures at Aberdeen Test Center (ATC), Artillery Systems Dem/Val (CRUSADER) at YPG, LONGBOW HELLFIRE at Redstone Technical Test Center (RTTC), COMANCHE Helicopter subsystems at YPG and Aviation Technical Test</li> </ul>											

Project DF30

Page 3 of 15 Pages

Exhibit R-2 (PE 0605601A)

1128

Item 118

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605601A Army Test Ranges and Facilities

DF30

## FY 1998 Planned Program: (continued)

Center (ATTC), JAVELIN BLOCK II at RTTC, Light/Medium Tactical Vehicles (4X4) at ATC, Army Tactical Missile System (ATACMS) Block II at White Sands Missile Range (WSMR), Theater Missile Defense (TMD) and Theater High Altitude Area Defense (THAAD) at WSMR, Brilliant Anti-Armor Terminally Guided Submunition (BAT) at WSMR and RTTC, Multiple Launch Rocket System (MLRS) and Launcher at WSMR and RTTC, Improved Target Acquisition System/TOW missile at RTTC, Enhanced Fiber Optic Guided Missile (EFOG-M) at RTTC and WSMR, Aircraft Survivability Equipment at ATTC, Heavy Assault Bridge at ATC, Airborne Avionics at ATTC, Forward Area Air Defense Ground Based Sensor at WSMR, Air Reconnaissance Low at ATTC and WSMR, EH-60 QUICKFIX at WSMR, M915A2 Line Haul Truck at ATC, M1 Breacher at ATC, Advanced Field Artillery Tactical Data System (AFATDS) at YPG, Land Warrior at ATC and YPG, Advanced Tank Armaments at ATC, Close Combat Tactical Trainer at ATC, Ground Combat Identification at YPG, and Heavy Utility Truck at ATC. Program accomplishes 62% of projected executable workload with no range modernization.

•	440	Airborne Engineering Evaluation Support Activity (AEESA), Fort Monmouth, NJ
•	2910	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	116031	

## FY 1999 Planned Program:

• 119063 Command-wide integrated test planning, safety assessment/verification and test operations (previously funded under DE90, DE91, DE93, D618, D630, and D632). Involvement in over 680 Integrated Product Team efforts and issuance of over 315 safety releases and over 90 safety confirmations is projected on both major and non-major acquisition programs/experiments. Some of the major systems to be tested include: High Mobility Multi Purpose Wheeled Vehicle Prototype at Aberdeen Test Center (ATC), Close Combat Tactical Trainer (CCTT) at ATC and White Sands Missile Range (WSMR), Naval Ship Structures at ATC, Artillery Systems Dem/Val (CRUSADER) at Yuma Proving Ground (YPG), LONGBOW HELFIRE at Redstone Technical Test Center (RTTC), COMANCHE Helicopter subsystems at YPG and Aviation Technical Test Center (ATTC), JAVELIN BLOCK II at RTTC, Medium and Light/Medium Tactical Vehicles (4X4) at ATC, Army Tactical Missile System (ATACMS) Block II at WSMR, Theater Missile Defense (TMD) and Theater High Altitude Area Defense (THAAD) at WSMR, Mine Neutralization at YPG, Brilliant Anti-Armor Terminally Guided Submunition (BAT) at WSMR and RTTC, Multiple Launch Rocket System (MLRS) and Launcher at WSMR and RTTC, Improved Recovery Vehicle at ATC, Improved Target Acquisition System/TOW missile at RTTC, Follow-on to TOW at RTTC, SMART-T at WSMR, Enhanced Fiber Optic Guided Missile (EFOG-M) at RTTC and WSMR, Aircraft Survivability Equipment at ATTC, Heavy Assault Bridge at ATC, Airborne Avionics at ATTC, Forward Area Air Defense Ground Based Sensor at WSMR, Improved Cargo Helicopter at ATTC, EH-60 QUICKFIX at WSMR, 2-1/2 Ton, 5 Ton, HMMWV Extended Service Life Program at ATC, M1 Breacher at ATC, Advanced Field Artillery Tactical Data System (AFATDS) at YPG, Multi-Purpose Individual Munition at ATC and RTTC, Land Warrior at ATC and YPG, and 10 Ton Recovery Truck (8X8) at ATC. Program accomplishes 62% of projected executable workload with no range modernization.

•	490	Airborne Engineering Evaluation Support Activity (AEESA)
Total	119553	

Project DF30

Page 4 of 15 Pages

Exhibit R-2 (PE 0605601A)

1129

Item 118

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605601A Army Test Ranges and Facilities</b>	<b>DF30</b>	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1998	FY 1999
Appropriated Value		119728	126953
Adjustments to Appropriated Value		119728	
FY 1999 President's Budget		-3697	
		116031	119553
<p>Change Summary Explanation:</p> <p>Funding: This is a new project combining the prior individual projects for TECOM test centers (excluding Dugway Proving Ground) and the TECOM HQ integrated test planning and safety assessment/verification functions.</p>			
Project DF30		Exhibit R-2 (PE 0605601A)	



RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605601A Army Test Ranges and Facilities								DE90	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE90	Yuma Proving Ground	18086	0	0	0	0	0	0	0	0	

**A. Mission Description and Justification:** Project DE90 Yuma Proving Ground: Yuma Proving Ground (YPG), AZ is DoD's primary artillery, air delivery and desert test range. Vast tracts of varied desert terrain provide testers with conditions found in the Middle East and other desert areas. YPG's mission is to plan, conduct, analyze, and report the results of research, development and other tests of aircraft armament, long-range cannon artillery, air delivery, and mobility systems. Major facilities include an artillery firing range; Army's only air-to-ground aircraft armament range with precision real-time instrumentation; the Army's only weapons accuracy range with actual targets for testing direct fire aircraft and weapons; an instrumented air delivery test area; and desert and dust mobility test areas. YPG is designated as the DoD primary test site for electromagnetic/electrothermal gun systems under Project Reliance. Under Reliance, YPG is also designated as the primary site for the conduct of indirect fire gun munitions and a specialty site for land vehicle testing. YPG manages all extreme natural environment testing (desert, cold weather, and tropic) with off site physical locations (tropic testing in Panama and cold weather testing in Alaska). Cold Regions Test Center (CRTC), Fort Greely, AK is the only cold region environmental test center within DoD. This program includes support of development and production acceptance testing to determine the performance of extreme cold weather specific equipment, the effects of extreme cold weather, wind, and snow on the performance of weapons systems and materiel in full operation, and the man/materiel interface. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs.

**FY 1997 Accomplishments:**

- 18086 Key systems tested were: KIOWA Warrior (OH-58D), Wide Area Mine (HORNET), CRUSADER Advanced Field Artillery System, USMC Light Armored Vehicle, BRADLEY Fighting Vehicle System, Improved Extreme Cold Weather Boot, M1A2 ABRAMS Tank, and the German SP2000 Howitzer.

Total 18086

**FY 1998 and FY 1999 Planned Program:** Project consolidated into project DF30 effective FY 1998.

**B. Project Change Summary**

FY 1997	FY 1998	FY 1999
17054	0	0
17418		
+668		
18086	0	0

Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget

Change Summary Explanation: Funding: Project consolidated into project DF30 effective FY 1998.

Project DE90

Page 6 of 15 Pages

Exhibit R-2 (PE 0605601A)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605601A Army Test Ranges and Facilities								DE91																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
DE91	Aberdeen Test Center	31042	0	0	0	0	0	0	0	0																					
<p><b>A. Mission Description and Justification:</b> Project DE91 Aberdeen Test Center: Aberdeen Test Center (ATC), formerly known as Combat Systems Test Activity, Aberdeen Proving Ground, MD is DOD's designated lead agency for land vehicle testing and Congressionally mandated live fire testing. Under Project Reliance, ATC is designated as primary test site for land vehicle and direct fire gun munitions testing. ATC is responsible for conducting research, development tests of weapons and weapon systems; munitions and components; survey and target acquisition equipment; combat, special, and general purpose vehicles and ancillary automotive equipment; combat engineer equipment; and troop support and individual equipment. ATC is the DoD tester for vulnerability/lethality of Army systems. Major facilities include the Munson automotive test courses, firing ranges addressing a wide variety of firing capabilities, cross-country automotive test sites, a unique robotics vehicle test facility, moving target projection facility, live fire evasive target facility, armor/anti-armor depleted uranium containment facility (Super Box), the elevated rail threat launch facility, underwater test facility for the conduct of tests for surface and subsurface ship structures (Navy support), and a number of special test laboratories. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>31042 Some of the systems tested were: BRADLEY Fighting Vehicle System, M1A1 and M1A2 ABRAMS Tank, Navy Ship Structures, M839 120mm Tank Round, M917 Dump Truck, USMC Advanced Amphibious Assault Vehicle, M88 Improved Recovery Vehicle (HERCULES), and the Heavy Assault Bridge. Institutional funds were also used to modernize test facilities and equipment to maintain current test capabilities and improve the safety, environmental, efficiency, and technological aspects of test operations.</li> </ul> <p>Total 31042</p> <p><b>FY 1998 and FY 1999 Planned Program:</b> Project consolidated into project DF30 effective FY 1998.</p> <p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>34436</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>35172</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-4130</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>31042</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 1997 (-3394) to align resources within PE 0605601A in accordance with workload. This project consolidated into project DF30 effective FY 1998.</p>													FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	34436	0	0	Appropriated Value	35172			Adjustments to Appropriated Value	-4130			FY 1999 President's Budget	31042	0	0
	FY 1997	FY 1998	FY 1999																												
FY 1998/1999 President's Budget	34436	0	0																												
Appropriated Value	35172																														
Adjustments to Appropriated Value	-4130																														
FY 1999 President's Budget	31042	0	0																												

Project DE91

Page 7 of 15 Pages

Exhibit R-2 (PE 0605601A)

1132

Item 118

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605601A Army Test Ranges and Facilities								DE93	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE93	White Sands Missile Range	64470	0	0	0	0	0	0	0	0	

**A. Mission Description and Justification:** Project DE93 White Sands Missile Range: White Sands Missile Range (WSMR), NM, is the largest, multi-purpose, overland test range within DoD. This project provides for testing of ballistic and guided missiles, air defense systems, and artillery missile systems for all services. It is the DoD designated primary test facility for overland surface-to-air and surface-to-surface missile testing and nuclear effects under Project Reliance. Launch complexes are integrated into a modern, real-time data collection and data reduction processing system. Facilities include optical and calibration laboratories, inertial guidance test facilities, full spectrum nuclear effects facilities (i.e., radiation, thermal, blast, electromagnetic pulse), temperature, shock, vibration, and electromagnetic effects, and a fully landlocked/secure test missile flight facility. WSMR facilities and services are extensively utilized by the Tri-Services, National Aeronautics and Space Administration, and other government agencies and includes support to the High Energy Laser Systems Test Facility located at WSMR. The Electronic Proving Ground (EPG) is consolidated under WSMR. EPG, Fort Huachuca, AZ, is unique within DoD because of the electromagnetically "clean" environment, extensive real estate, low annual rainfall, and special facilities required to perform development tests for communications, command and control, optical/electro-optical, signal intelligence, and electronic warfare equipment and systems. EPG operates an electro-magnetic environment test facility, an unmanned aerial vehicle test facility, antenna pattern measurement facility, electro-magnetic interference (EMI)/electro-magnetic compatibility (EMC)/TEMPEST test facility, communication test facility, outdoor compact antenna range, high frequency test facility, stress loading facility, and an electro-optical systems test facility. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test and program costs.

**FY 1997 Accomplishments:**

- 64470 Some of the key systems tested were: PATRIOT Missile System, Theater High Altitude Area Defense (THAAD), support of Army Warfighting Experiments, Army Tactical Command and Control System (ATCCS), Army Tactical Missile System, Integrated Meteorological System, Global Positioning System, Multiple Launch Rocket System, Theater Missile Defense, and Brilliant Anti-Armor Submunition (BAT).

Total 64470

**FY 1998 and FY 1999 Planned Program:** Project consolidated into project DF30 effective FY 1998.

Project DE93

Page 8 of 15 Pages

Exhibit R-2 (PE 0605601A)

1133

Item 118

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605601A Army Test Ranges and Facilities</b>	<b>DE93</b>	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		5945	0
Adjustments to Appropriated Value		61233	0
FY 1999 President's Budget		+3237	0
		64470	0
Change Summary Explanation: Funding: Project consolidated into project DF30 effective FY 1998.			

Project DE93

Page 9 of 15 Pages

Exhibit R-2 (PE 0605601A)

1134

Item 118

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605601A Army Test Ranges and Facilities								D618																					
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
D618	Aviation Technical Test Center	9306	0	0	0	0	0	0	0	0																					
<p><b>A. Mission Description and Justification:</b> Project D618 Aviation Technical Test Center (ATTC), Fort Rucker, AL provides a capability for research, development, production, verification, and materiel change testing of Army aircraft, Aircrew systems/subsystems, and various items of related ground support equipment. Fleet Aircraft Sustainment Testing (FAST) is also conducted to provide continuous reliability/supportability data on new and modified aircraft systems/subsystems. ATTC operates DoD's only helicopter icing spray capability and low speed, fixed wing cloud physics instrumented aircraft which provide for qualification of helicopters for flight under icing conditions. Also funds the Airborne Engineering Evaluation Support Activity (AEESA) at CECOM which includes night vision research, aircraft modeling, flight support, modification of airframes and installation of night vision systems. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test and program acquisition costs.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>8787 Some of the key systems tested were: KIOWA Warrior (OH-58D), UH-1H Utility Helicopter, UH-60 BLACKHAWK, COMANCHE, CH-47D CHINOOK, AH-64 APACHE, and the Long Range Biological Standoff Detection System.</li> <li>519 Airborne Engineering Evaluation Support Activity (AEESA), Fort Monmouth, NJ</li> </ul> <p>Total 9306</p> <p><b>FY 1998 and FY 1999 Planned Program:</b> Project consolidated into project DF30 effective FY 1998.</p> <p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>12557</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>12826</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-3520</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>9306</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 1997 decrease of (-3251) reprogrammed based on acceleration of the Airworthiness Qualification Directorate from Edwards AFB, CA to Fort Rucker, AL in FY 1996, and to realign resources within PE 0605601A in accordance with workload. This project consolidated into project DF30 effective FY 1998.</p>													FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	12557	0	0	Appropriated Value	12826			Adjustments to Appropriated Value	-3520			FY 1999 President's Budget	9306	0	0
	FY 1997	FY 1998	FY 1999																												
FY 1998/1999 President's Budget	12557	0	0																												
Appropriated Value	12826																														
Adjustments to Appropriated Value	-3520																														
FY 1999 President's Budget	9306	0	0																												

Project D618

Page 10 of 15 Pages

Exhibit R-2 (PE 0605601A)

1135

Item 118

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998		PROJECT																			
BUDGET ACTIVITY		PE NUMBER AND TITLE		0605601A Army Test Ranges and Facilities		D630																			
6 - Management and Support		FY 1997 Actual		FY 1998 Estimate		FY 1999 Estimate																			
COST (In Thousands)		FY 2000 Estimate		FY 2001 Estimate		FY 2002 Estimate																			
FY 2003 Estimate		Cost to Complete		Total Cost																					
D630	TECOM Test Design and Evaluation	4024	0	0	0	0	0																		
<p><b>A. Mission Description and Justification: Project D630 TECOM Test Design and Evaluation:</b> This project provides for independent assessment of over 300 non-major systems. It encompasses design of developmental and initial production assessment plans, test design, and subsequent independent analysis and assessment reports in support of all acquisition milestones to include recommendations for type classification and materiel release of non-major systems. Includes some 125-150 independent assessment plans and reports annually in the areas of munitions, weapons, electronics, communications, electronic warfare training devices, automotive and engineering equipment, bridging, clothing and individual equipment, chemical detection alarms, and chemical protective equipment. It also provides for TECOM HQ safety assessment/verification, and for test integration functions in support of the Army's integrated T&amp;E process.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1782 TECOM HQ integrated test planning and safety assessment/verification function including participation in 713 Integrated Product Teams and the issuance of 331 safety releases and 96 safety confirmations.</li> <li>2242 Army Evaluation Center/OPTEC. Continued test design and assessment program, addressing new developments, production, and materiel changes.</li> </ul> <p>Systems included:</p> <table border="0"> <tr> <td>- Aviation Combined Arms Tactical Trainer</td> <td>Air Traffic Navigation and Communication System</td> </tr> <tr> <td>- Army Key Management System</td> <td>Mobile Automated Instrumentation Suite</td> </tr> <tr> <td>- Tactical Standoff Biological Detector</td> <td>Joint Service Lightweight Integrated Suit Technology (JSLIST)</td> </tr> <tr> <td>- Deployable Universal Combat Earthmover</td> <td>Containerized Kitchen</td> </tr> <tr> <td>- Air Warrior</td> <td>Remote Activation Munitions System</td> </tr> <tr> <td>- Airborne Standoff Minefield Detection System</td> <td>Handheld Mine Detection System</td> </tr> <tr> <td>- Close Combat Tactical Trainer</td> <td>Selectable Lightweight Attack Munition</td> </tr> <tr> <td>- Land Warrior</td> <td>Multiple Integrated Laser Engagement System - 2000</td> </tr> <tr> <td>- SHORTSTOP</td> <td>IEW Common Sensor</td> </tr> </table> <p>Total 4024</p> <p><b>FY 1998 and FY 1999 Planned Program:</b> Effective FY 1998, project funds are realigned into project DF30 for integrated test planning and safety assessment/verification within TECOM and into project D699 for consolidation of Army's materiel evaluation mission within OPTEC.</p>								- Aviation Combined Arms Tactical Trainer	Air Traffic Navigation and Communication System	- Army Key Management System	Mobile Automated Instrumentation Suite	- Tactical Standoff Biological Detector	Joint Service Lightweight Integrated Suit Technology (JSLIST)	- Deployable Universal Combat Earthmover	Containerized Kitchen	- Air Warrior	Remote Activation Munitions System	- Airborne Standoff Minefield Detection System	Handheld Mine Detection System	- Close Combat Tactical Trainer	Selectable Lightweight Attack Munition	- Land Warrior	Multiple Integrated Laser Engagement System - 2000	- SHORTSTOP	IEW Common Sensor
- Aviation Combined Arms Tactical Trainer	Air Traffic Navigation and Communication System																								
- Army Key Management System	Mobile Automated Instrumentation Suite																								
- Tactical Standoff Biological Detector	Joint Service Lightweight Integrated Suit Technology (JSLIST)																								
- Deployable Universal Combat Earthmover	Containerized Kitchen																								
- Air Warrior	Remote Activation Munitions System																								
- Airborne Standoff Minefield Detection System	Handheld Mine Detection System																								
- Close Combat Tactical Trainer	Selectable Lightweight Attack Munition																								
- Land Warrior	Multiple Integrated Laser Engagement System - 2000																								
- SHORTSTOP	IEW Common Sensor																								

Project D630

Page 11 of 15 Pages

Exhibit R-2 (PE 0605601A)

1136

UNCLASSIFIED

Item 118

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT																				
<b>6 - Management and Support</b>		<b>0605601A Army Test Ranges and Facilities</b>	<b>D630</b>																				
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>4685</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>4785</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-761</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>4024</td> <td>0</td> <td>0</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	4685	0	0	Appropriated Value	4785			Adjustments to Appropriated Value	-761			FY 1999 President's Budget	4024	0	0
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	4685	0	0																				
Appropriated Value	4785																						
Adjustments to Appropriated Value	-761																						
FY 1999 President's Budget	4024	0	0																				
<p>Change Summary Explanation: Funding: FY 1997 decrease of (-661) reprogrammed to fund higher priorities. Effective FY 1998, project funds are realigned into project DF30 for integrated test planning and safety assessment/verification within TECOM and into project D699 for consolidation of Army's materiel evaluation mission within OPTEC.</p>																							
Project D630		Exhibit R-2 (PE 0605601A)																					

Page 12 of 15 Pages

Item 118

1137

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

## 0605601A Army Test Ranges and Facilities

D632

COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D632 Redstone Technical Test Center	1108	0	0	0	0	0	0	0	0

**A. Mission Description and Justification:** Project D632 Redstone Technical Test Center (RTTC), Redstone Arsenal, AL provides technical test expertise, facilities and capabilities for conduct of research, development, production and post-production testing of missiles, rockets, and low energy/precision guidance lasers. RTTC conducts system level tests on small rockets and missiles, and component/subsystem tests for all categories of Army rockets, guided missiles, and associated equipment. RTTC is the Army lightning tester for hazardous/explosive materials. Major capabilities include a) extensive component/subsystem test facilities, b) ranges for flight testing small missiles and evaluating warhead effects, c) rocket motor static test stands, and d) facilities for climatic, vibration, shock, and electromagnetic environmental effects testing. RTTC is the Product Assurance tester for the Army's Missile Command for repair parts testing and evaluating missile stockpile reliability at storage sites around the world. Through stockpile reliability testing, missile shelf life extension has resulted in cost avoidance greater than \$7.9 billion. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test and program acquisition costs.

**FY 1997 Accomplishments:**

- 1108 Some of the key systems tested were: JAVELIN, Missile Repair Parts, TOW/Improved BRADLEY Acquisition System, TOW/Improved Target Acquisition System, USAF MAVERICK Missile, STINGER Missile, HELLFIRE Missile, and Brilliant Anti-armor Submunition (BAT).

Total 1108

**FY 1998 and FY 1999 Planned Program:** Project consolidated into project DF30 effective FY 1998.**B. Project Change Summary**

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1545	0	0
Appropriated Value	1578		
Adjustments to Appropriated Value	-470		
FY 1999 President's Budget	1108	0	0

Change Summary Explanation: Funding: FY 1997 decrease of (-437) reprogrammed to fund higher priorities This project consolidated into project DF30 effective FY 1998.

Project D632

Page 13 of 15 Pages

Exhibit R-2 (PE 0605601A)

1138

Item 118

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
6 - Management and Support		0605601A Army Test Ranges and Facilities								D699		
			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D699	Non-Major Sys Test Design and Evaluation	COST (/In Thousands)	0	2296	0	0	0	0	0	0	0	
<p><b>A. Mission Description and Justification: Project D699, Non-Major Systems Test Design and Evaluation:</b> This is not a new start. FY 1998 funding was realigned from the U.S. Army Test and Evaluation Command (TECOM) (Project D630) to the U.S. Army Operational Test and Evaluation Command (OPTEC) as part of the Army's consolidation of the materiel evaluation mission. Starting in FY 1999 funding for Project D699 has been transferred to PE 0605716A Army Evaluation Center established under US Army Operational Test and Evaluation Command (OPTEC) to perform the Army's consolidated developmental and operational evaluation function. Project D699 provides for independent evaluation of all Army non-major systems. This project supports integrated Army evaluation for decision makers at milestone reviews, includes the development of test design, evaluation plans, and subsequent independent evaluations of all acquisition milestones to include recommendations for type classification and materiel release of non-major systems. Evaluation results will be incorporated into a single Army evaluation and presented at all acquisition milestones.</p> <p><b>FY 1997 Accomplishments:</b> Project funded under Project D630 in FY 1997.</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2239 Funds 35 civilian authorizations required to continue test design and evaluation programs, addressing new developments, production, and materiel changes. Programmed items include: <ul style="list-style-type: none"> <li>- Non-Lethal Ammo Family</li> <li>- TRAILBLAZER</li> <li>- Air Warrior</li> <li>- Modular Body Armor</li> <li>- Joint Biological Detector</li> <li>- Close Combat Tactical Trainer</li> <li>- Ground Based Common Sensor - Light</li> </ul> </li> <li>• 57 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 2296</p> <p><b>FY 1999 Planned Program:</b> Project consolidated into the newly established PE 0605716A Army Evaluation Center under OPTEC.</p>												

Project D699

Page 14 of 15 Pages

Exhibit R-2 (PE 0605601A)

1139

Item 118

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT																				
<b>6 - Management and Support</b>		<b>0605601A Army Test Ranges and Facilities</b>	<b>D699</b>																				
<p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td></td> <td>0</td> <td>2389</td> <td>1966</td> </tr> <tr> <td>Appropriated Value</td> <td></td> <td>2389</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td>-93</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>2296</td> <td>0</td> </tr> </table>				FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999		0	2389	1966	Appropriated Value		2389		Adjustments to Appropriated Value		-93		FY 1999 President's Budget	0	2296	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																				
	0	2389	1966																				
Appropriated Value		2389																					
Adjustments to Appropriated Value		-93																					
FY 1999 President's Budget	0	2296	0																				
<p>Change Summary Explanation: Funding: FY 1999 Funds (-1966) transferred to PE 0605716A Army Evaluation Center under OPTEC.</p>																							

Project D699

Page 15 of 15 Pages

Exhibit R-2 (PE 0605601A)

1140

Item 118

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1141

Item 118

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE							
BUDGET ACTIVITY		PROJECT							
6 - Management and Support		February 1998							
PE NUMBER AND TITLE		PROJECT							
0605602A Army Test Technology and Sustaining Instrumentation		D628							
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D628 Test Technology & Sustaining Instrumentation	20761	32160	33439	35758	37991	39899	41824	Continuing	Continuing

**A. Mission Description and Budget Item Justification: Project D628 - Test Technology & Sustaining Instrumentation:** Test technology provides critical front-end efforts for development of new test methodologies, test standards, advanced test technology concepts for long range requirements, future test capabilities, and advanced instrumentation prototypes for US Army Test and Evaluation Command (TECOM) which includes: Yuma Proving Ground (YPG), AZ; Aberdeen Test Center (ATC), MD; Dugway Proving Ground (DPG), UT; White Sands Missile Range (WSMR), NM; Redstone Technical Test Center (RTTC), AL; and Aviation Technical Test Center (ATTC), AL. Within this element, a major initiative called Virtual Proving Ground (VPG) is directed towards integrating Modeling & Simulation and internetting technologies into the Test and Evaluation process to support acquisition streamlining and to address significant downsizing and budget reductions. Sustaining instrumentation maintains existing technical testing capabilities at TECOM test facilities by replacing unreliable, uneconomical and irreparable instrumentation, as well as incremental upgrades of instrumentation and software, to assure adequate test data for acquisition milestone decisions for projects such as Patriot Advanced Capability Phase 3 (PAC 3), M1A2 Main Battle Tank, Joint Service Lightweight Integrated Suit Technology (JSLIST), Crusader, Theater High Altitude Area Defense (THAAD), Comanche and Javelin. Increase beginning in FY 1998 funds critical instrumentation shortfalls and fully implements the TECOM VPG. This innovative Acquisition Streamlining Initiative in testing will significantly improve the ability of the Army to provide early influence on system design, reduce test costs, extend the envelope of information to reduce risk and reduce acquisition costs. This initiative is critical to achieving long term efficiencies not only within the T&E mission to offset funding and manpower reductions but also within the acquisition process at large. Test instrumentation and equipment affected by the Year 2000 (Y2K) phenomena will be modified/replaced to maintain data integrity and test site safety as the millennium changes. Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

**FY 1997 Accomplishments:**

- 1436 Provided quick reaction capability to respond to failed instrumentation and replacement needs, provided support for technical committees forging future instrumentation technology developments and maintained/improved existing capability by replacement and limited upgrades of worn out, obsolete or unserviceable equipment/instrumentation at Army technical test ranges (such as replacement of cameras using film with video data instrumentation and digital cameras). Developed prototype instrumentation (design initiation of IR Simulation Test Acceptance Facility) and performed advanced concept studies for development of new technologies (corrosion study of Tropic Test Sites). Continued to develop Test Operations Procedures (TOPs) and International Test Operations Procedures (ITOPs) to ensure quality and consistency of test results throughout Army and for international cooperative applications.

Project D628

Page 1 of 8 Pages

Exhibit R-2 (PE 0605602A)

1142

UNCLASSIFIED

Item 119

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605602A Army Test Technology and Sustaining Instrumentation	D628	
FY 1997 Accomplishments: (continued)			
8767	Continued support of TECOM Virtual Proving Ground (VPG): Aberdeen Test Center (ATC): Continued to develop databases, detailed models and system interfaces to link VPG tools with legacy systems. Continued to develop Distributed Simulation Architecture and test procedures needed to link high fidelity system models with synthetic test stimuli and virtual instrumentation to conduct simulation testing of automotive and combat vehicles.		
	Aviation Technical Test Center (ATTC): Began integration of aircraft, terrain and targeting models in support of aviation survivability testing. Initiated development of a totally virtual test range to integrate various system models with threat models.		
	Dugway Proving Ground (DPG): Continued development of software to be used for chemical biological/aerosol testing. Developed a multimedia communications network system and a VPG training program for the command.		
	Redstone Technical Test Center (RTTC): Continued to acquire the capability to support virtual component/subsystem tests for small missile systems with open loop and closed loop non-destructive testing of imaging IR/MMW Seekers and all-up-round missiles. Continue developing ground truth databases. Completed networking of ground truth databases and the capability to replicate flight dynamic motion environments.		
	White Sands Missile Range (WSMR): Developed Virtual test capabilities for Command, Control, Communications, Computers and Intelligence (C4I) systems and continued development of virtual mission planning & real-time data analysis capability. Completed software development for modeling large scale C4I deployments in electromagnetic environments.		
	Yuma Proving Ground (YPG): Developed digital database (mapping and clutter characteristics) and graphics capability for system applications.		
	HQ TECOM: Continued VPG design and integration.		
377	ATTC: Continued replacement of Rotary-wing Flight Test Cockpit Indicators (sensors and switches which measure liquid pressure, gas pressure, temperature, voltages, acceleration, vibration and flow rates) and initiated the acquisition of low dynamics Global Positioning System (GPS) equipment for programs such as Comanche and Special Ops aircraft.		
1210	ATC: Continued acquisition of high-speed data analysis and processing equipment. Initiated support for the Land Warrior Test Suite to measure soldier impact/interface of equipment and capability. Began acquisition of range and system safety instrumentation.		
856	DPG: Continued replacement of chemical/biological laboratory analysis instrumentation to sustain the Nuclear, Biological, Chemical (NBC) Defense mission.		
1382	WSMR: Continued to modify the Command Destruct system for remote control capability IAW personnel downsizing and safety assurance initiatives. Initiated development of an upgrade to the laser tracking capability and began acquisition of Real Time Data Processing capability.		
Project D628		Page 2 of 8 Pages	
		Exhibit R-2 (PE 0605602A)	

1143

Item 119

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
6 - Management and Support	0605602A Army Test Technology and Sustaining Instrumentation	February 1998	D628
<p><b>FY 1997 Accomplishments: (continued)</b></p> <ul style="list-style-type: none"> <li>1180 YPG: Continued to upgrade data acquisition, processing and display capabilities for air-to-ground and ground-to-ground armaments testing to include a mobile mission control system.</li> <li>1175 RTTC: Continued development of the vibro-acoustic flight capability to produce dynamically accurate missile flights necessary to reduce the number of costly missile test flights. Acquired fiber optics cables for data transfer and communications. Replaced solid state power amplifiers used in physical environments testing. Completed the fabrication of the Thermal Ablative Test Stand used to characterize materials in advanced missile systems.</li> <li>4378 HQ TECOM: Provided technical support costs to include salaries and benefits, travel, training and developmental assignments for Directorate for Technical Mission personnel, who manage requirements development, project prioritization, and execution of investment accounts for Small Business Innovative Research, Production Base Support, Army Test Technology and Sustaining Instrumentation, Major Test and Evaluation Investment, and the Central Test and Evaluation Investment Program, totaling \$80-\$100M/yr. Management and support costs also provide direct interface to the T&amp;E Executive Agent, managing needs and solutions calls for T&amp;E Reliance oversight, and supporting the Army TERIB co-chair and the Army principal on the T&amp;E Board of Operating Directors. Provided administrative support for Local Area Network and TECNET, contracts, patents, Symposia and Conferences, exhibits and printing. Continued funding support to the Joint Program Office (JPO) for Test and Evaluation under the tri-service Executive Agent for Test and Evaluation.</li> </ul> <p>Total 20761</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>905 Provide quick reaction capability to respond to failed instrumentation and replacement needs, provide support for technical committees forging future instrumentation technology developments and maintain/improve existing capability by replacement and limited upgrade of worn out, obsolete or unserviceable equipment/instrumentation at Army technical test ranges (such as a Portable Data Acquisition and reduction System). Develop prototype instrumentation (equipment used in the elimination of refrigerants) and perform advanced concept studies for development of new technologies. Continue to develop Test Operations Procedures (TOPs) and International Test Operations Procedures (ITOPs) to ensure quality and consistency of test results throughout Army and for international cooperative applications.</li> <li>16027 Continue support of TECOM Virtual Proving Ground (VPG):           <ul style="list-style-type: none"> <li>ATC: Continue to develop databases, detailed models and system interfaces to include a reconfigurable man-in-the-loop testing capability of ground vehicle systems. Continue development of the Distributed Simulation Architecture and test procedures needed to link high fidelity system models with synthetic test stimuli and virtual instrumentation to conduct simulation testing of automotive and combat vehicles. Begin funding the cooperative Technology Program Annexes (TPA) with the Army Research Lab in developing capabilities and implementation of VPG. Attain a High Level Architecture (HLA) Federation with RTTC and ATTC in development of VPG models and simulation enhancements. Support the VISION; Test and Training XXI Initiative.</li> </ul> </li> </ul>			
Project D628		Page 3 of 8 Pages	Exhibit R-2 (PE 0605602A)

1144

Item 119

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>
BUDGET ACTIVITY <b>6 - Management and Support</b>	PE NUMBER AND TITLE <b>0605602A Army Test Technology and Sustaining Instrumentation</b>	PROJECT <b>D628</b>

**FY 1998 Planned Program: (continued)**

ATTC: Continue development of a totally virtual test range to integrate various system models with threat models to include integration of the Comanche aircraft model with ground truth telemetry data to perform virtual flight visualization testing.

DPG: Continue the development of software to be used in support of chemical biological/aerosol testing. Perform Verification, Validation and Accreditation (VV&A) of the Atmospheric Effects Module (4DWX) software model.

RTTC: Continue to acquire the capability to support virtual component/subsystem tests for small missile systems with open loop and closed loop non-destructive testing of imaging IR/MMW Seekers, and all-up-round missiles. Continue development of ground truth databases, procure a Dynamic 3-Dimensional IR Scene Generation System for the Electro-Optical Sensor Flight Evaluation Laboratory (EOSFEL) which will provide the capability to accept 3-D Virtual Range databases, also procure and install fiber optic interface equipment. Provide support to Project Constellation, a distributed virtual test capability across multiple TECOM test centers (WSMR, EPG, EPG/Ft Lewis, ATTC and RTTC) using standard architectures, networks, and validation/accreditation procedures.

WSMR: Continue development of virtual reality mission planning/playback for large missile systems. Continue to acquire real-time data analyses workstations to replace non-maintainable obsolete mainframe computers. Continue development of C4I and EW testing capabilities which replaces expensive airborne jammers with simulators which inject actual threat waveforms into the test items and will significantly reduce test costs, test time, and provides test repeatability (controlled test parameters). Develop test range and laboratory fiber-optic interconnectivity, and virtual test capability. Develop DIS and HLA interfaces between test control centers and VPG models. Develop an Airblast Survivability Model for Comanche and an Electromagnetic Model for Breacher (minefield clearing system on M1 chassis).

YPG: Continue development of digital mapping and clutter characteristics. Initiate development of terrain and ground truth databases. Develop aviation fire control and line of sight models. Develop requirements for integrated air delivery modeling and simulation.

HQ TECOM: Continue VPG design and integration.

819 ATTC: Continued replacement of Rotary-wing Flight Test Cockpit Indicators. Acquire wireless rotor measurement equipment, data management hardware and software needed to streamline acquisition and data reduction time, test analysis workstations, and interfaces. Develop software to integrate GPS equipment with a ground control station.

2201 ATC: Continue development of test site integration which consists of network communications between test site instrumentation and a centralized workstation for test control, monitoring and real-time data analysis and review. Continue to acquire high-speed analysis and processing equipment. Continue to acquire range and system safety instrumentation. Initiate development of a combined Developmental Test (DT)/Operational Test (OT) vehicle instrumentation package. Initiate development of vehicle endurance/performance test data analyzers.

398 DPG: Acquire agent hood ventilation system filters and chemical/biological laboratory analysis instrumentation for the Combined Chemical Test Facility to sustain the Nuclear, Biological, Chemical (NBC) Defense mission. Acquire fiber optic network equipment to interconnect the large-scale test grid for outdoor bio-testing.

Project D628

Page 4 of 8 Pages

Exhibit R-2 (PE 0605602A)

1145

Item 119

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605602A Army Test Technology and Sustaining Instrumentation	D628	
FY 1998 Planned Program: (continued)			
• 3448	WSMR: Complete modification of the Command Destruct system for remote control capability IAW personnel downsizing and safety assurance initiatives. Continue upgrade of a single station laser tracker. Initiate development of an instrumentation platform to remotely collect, analyze, transmit and log C4I message traffic. Initiate development of high-resolution video system to support optical tracking. Initiate upgrade to the Drone Formation Control System to control the QF-4 target drone.		
• 1096	YPG: Acquire mobile, portable, and base station trunked land radio units. Initiate development of a scoring sensor suite for turreted gun systems on rotary wing aircraft (small caliber munitions from .50 caliber to 30mm) and a gun pointing vector instrumentation package.		
• 1325	RTTC: Continue development of a vibro-acoustic flight capability to produce dynamically accurate missile flights necessary to reduce the number of costly missile test flights. Upgrade the laser tracker hardware and software to provide accurate and reliable Time Space Position Information (TSPi) data. Complete the acquisition of solid state power amplifiers, and begin acquiring electromagnetic radiation equipment that are used in physical environments testing.		
• 5168	HQ TECOM: Provide technical support costs to include salaries and benefits, travel, training and developmental assignments for Directorate for Technical Mission personnel, who manage requirements development, project prioritization, and execution of investment accounts for Small Business Innovative Research, Production Base Support, Army Test Technology and Sustaining Instrumentation, Major Test and Evaluation Investment, and the Central Test and Evaluation Investment Program, totaling \$80-\$100M/yr. Management and support costs also provide direct interface to the T&E Executive Agent, managing needs and solutions calls for T&E Reliance oversight, and supporting the Army TERIB co-chair and the Army principal on the T&E Board of Operating Directors. Provide administrative support for Local Area Network and TECNET, contracts, patents, Symposia and Conferences, exhibits and printing. Continue funding support to the Joint Program Office (JPO) for Test and Evaluation under the tri-service Test and Evaluation Executive Agent for Test and Evaluation. FY98 budget of \$32160K accomplishes 28% of the documented and prioritized requirements.		
• 773	Small Business Innovative Research/Small Business Technology Transfer Programs.		
Total	32160		
FY 1999 Planned Program:			
• 885	Provide quick reaction capability to respond to failed instrumentation and replacement needs, provide support for technical committees forging future instrumentation technology developments, and maintain/improve existing capability by replacement and limited upgrade of worn out, obsolete or unserviceable equipment/instrumentation at Army technical test ranges. Develop prototype instrumentation and perform advanced concept studies for development of new technologies. Continue to develop Test Operations Procedures (TOPs) and International Test Operations Procedures (ITOPs) to ensure quality and consistency of test results throughout Army and for international cooperative applications.		

Project D628

Page 5 of 8 Pages

Exhibit R-2 (PE 0605602A)

Exhibit R-2 (PE 0605602A)

Page 5 of 8 Pages

Project D628

1146

Item 119

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
6 - Management and Support	0605602A Army Test Technology and Sustaining Instrumentation	February 1998	D628
<p><b>FY 1999 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>15682 Continue support of TECOM Virtual Proving Ground (VPG):           <p>ATC: Continue in the development of databases, detailed models and system interfaces to include a reconfigurable man-in-the-loop testing capability of ground vehicle systems. Continue in the development of the Distributed Simulation Architecture and test procedures needed to link high fidelity system models with synthetic test stimuli and virtual instrumentation to conduct simulation testing of automotive and combat vehicles. Continue funding the cooperative Technology Program Annexes (TPA) with the Army Research Lab in developing capabilities and implementation of VPG. Continue to support the VISION; Test and Training XXI Initiative.</p> <p>ATTC: Continue development of a totally virtual test range to integrate various system models with threat models to include integration of the Comanche aircraft model with ground truth telemetry data to perform virtual flight visualization testing.</p> <p>DPG: Continue the development of software to be used in support of chemical biological/aerosol testing. Perform VV&amp;A of the chemical biological/aerosol models.</p> <p>RTTC: Complete acquisition of virtual component/subsystem test capability for small missile systems with open loop and closed loop non-destructive testing of imaging IR/MMW Seekers, and all-up-round missiles. Complete development of ground truth databases, and complete the acquisition of the Dynamic 3-Dimensional IR Scene Generation System for the Electro-Optical Sensor Flight Evaluation Laboratory (EOSFEL) which will provide the capability to accept 3-D Virtual Range databases, continue to procure and install fiber optic interface equipment. Continue to provide support to Project Constellation, a distributed virtual test capability across multiple TECOM test centers (WSMR, EPG, EPG/Ft Lewis, ATTC and RTTC) using standard architectures, networks, and validation/accreditation procedures. Develop an electromagnetic model to measure the susceptibility parameters of various anti-tank and Non-line-of-sight missiles.</p> <p>WSMR: Continue development of virtual reality mission planning/playback for large missile systems. Continue to acquire real-time data analyses workstations to replace non-maintainable obsolete mainframe computers. Continue development of C4I and EW testing capabilities which replaces expensive airborne jammers with simulators which inject actual threat waveforms into the test items and will significantly reduce test costs, test time, and provides test repeatability (controlled test parameters). Continue to develop test range and laboratory fiber-optic interconnectivity, and virtual test capability. Continue to develop DIS and HLA interfaces between test control centers and VPG models. Complete development of the Airblast Survivability Model for Comanche. Develop terrain and ground truth databases.</p> <p>YPG: Continue development of terrain and ground truth databases. Continue development of digital mapping and clutter characteristics, aviation fire control and line of sight models.</p> <p>HQ TECOM: Continue VPG design and integration.</p> </li> <li>440 ATTC: Continue to develop software to integrate GPS hardware with the ground control station. Continue to acquire test analysis workstations and wireless rotor measurement system. Acquire high volume/density airborne data recorders.</li> </ul>			

Project D628

Page 6 of 8 Pages

Exhibit R-2 (PE 0605602A)

1147

Item 119

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605602A Army Test Technology and Sustaining Instrumentation	D628	
FY 1999 Planned Program: (continued)			
•	2557	ATC: Continue development of test site integration which consists of network communications between test site instrumentation and a centralized workstation for test control, monitoring and real-time data analysis and review. Continue to acquire high-speed analysis/processing equipment and range and system safety instrumentation. Continue development of a combined DT/OT vehicle instrumentation package. Continue development of vehicle endurance/performance test data analyzers.	
•	698	DPG: Continue to acquire chemical/biological laboratory analysis instrumentation for the Combined Chemical Test Facility to sustain the Nuclear, Biological, Chemical (NBC) Defense mission. Acquire equipment to detect pathogens, toxins and chemical agents to support field testing. Acquire digital cameras and recorders to provide photonic metric measurements for Chem/Bio, Smoke/Obscure and Illumination testing.	
•	3475	WSMR: Acquire real-time data processing and analysis hardware/software. Continue development of high-resolution video system to support optical tracking. Complete upgrade of a single station laser tracker. Complete development of an instrumentation platform to remotely collect, analyze, transmit and log C4I message traffic. Continue upgrade of the Drone Formation Control System to control the QF-4 target drone.	
•	1375	YPG: Continue to acquire mobile, portable, and base station trunked land radio units. Continue development of a scoring sensor suite for turreted gun systems on rotary wing aircraft (small caliber munitions from .50 caliber to 30mm) and a gun pointing vector instrumentation package. Acquire equipment (high-speed video cameras and workstations) to develop an advanced target acquisition system to collect trajectory data for multiple air and ground targets.	
•	1550	RTTC: Complete development of a vibro-acoustic flight capability to produce dynamically accurate missile flights necessary to reduce the number of costly missile test flights. Continue upgrade of laser tracker hardware and software to provide accurate and reliable TSPI data. Continue to acquire electromagnetic radiation equipment, which are used in physical environments testing. Acquire workstations to digitize high bandwidth flight test data.	
•	6777	HQ TECOM: Provide technical support costs to include salaries and benefits, travel, training and developmental assignments for Directorate for Technical Mission personnel, who manage requirements development, project prioritization, and execution of investment accounts for Small Business Innovative Research, Production Base Support, Army Test Technology and Sustaining Instrumentation, Major Test and Evaluation Investment, and the Central Test and Evaluation Investment Program, totaling \$80-\$100M/yr. Management and support costs also provide direct interface to the T&E Executive Agent, managing needs and solutions calls for T&E Reliance oversight, and supporting the Army TERIB co-chair and the Army principal on the T&E Board of Operating Directors. Provide administrative support for Local Area Network and TECNET, contracts, patents, Symposia and Conferences, exhibits and printing. Continue funding support to the Joint Program Office (JPO) for Test and Evaluation under the tri-service Executive Agent for Test and Evaluation. FY99 budget of \$33439K accomplishes 27% of the documented and prioritized requirements.	
Total	33439		

Project D628

Page 7 of 8 Pages

Exhibit R-2 (PE 0605602A)

Project D628

Page 7 of 8 Pages

Exhibit R-2 (PE 0605602A)

1148

Item 119

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605602A Army Test Technology and Sustaining Instrumentation	D628	
B. Project Change Summary			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		21944	33184
Adjustments to Appropriated Value		22413	33184
FY 1999 President's Budget		-1652	-1024
		20761	32160
			33276
			33439

Project D628

Page 8 of 8 Pages

Exhibit R-2 (PE 0605602A)

Item 119

1149

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

## 0605604A Survivability/Lethality Analysis

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	29362	31308	30498	16363	18744	19467	20256	Continuing	Continuing
D670 Emerging Technology Systems	4568	5115	5759	2583	3055	3171	3298	Continuing	Continuing
D671 Air Defense/Missile Defense Systems	5443	5742	5779	3220	3643	3785	3940	Continuing	Continuing
D672 Aviation Systems	3507	3220	3174	1877	2027	2104	2188	Continuing	Continuing
D675 Force XXI and C4I/IEW Systems	4709	4362	4033	2227	2625	2728	2841	Continuing	Continuing
D677 Ground Combat Systems	5007	5030	5403	2920	3376	3510	3656	Continuing	Continuing
D678 Munitions Systems	5365	5440	5615	3115	3569	3706	3855	Continuing	Continuing
D679 Soldier Systems	763	800	735	421	449	463	478	Continuing	Continuing
D734 Survivability Evaluation	0	1599	0	0	0	0	0	Continuing	Continuing

NOTE: Starting in FY 1999 funding for Project D734 Survivability Evaluation has been transferred to newly established PE 0605716A Army Evaluation Center under US Army Operational Test and Evaluation Command (OPTEC) to perform the Army's newly consolidated developmental and operational evaluation function in support of the materiel acquisition process.

**Mission Description and Budget Item Justification:** This Program Element (PE) funds activities and functions to conduct objective and integrated survivability and lethality analyses (SLA) for all major and designated non-major Army systems. The analyses quantify the effects of electronic warfare (EW), ballistic, nuclear, chemical, and biological battlefield threats and meteorological conditions on Army individual soldiers and systems. This PE also funds vulnerability assessments of digitized systems for Force XXI.

The work is accomplished through threat research, theoretical and engineering analyses, signature measurements, modeling, simulations, laboratory experiments, and field investigations. Activities in progress include assessment of the effects of smokes and obscurants, passive countermeasures, tactics, lasers, high-power microwave, electro-optical/radio frequency (EO/RF) jammers, electromagnetic environment effects (E3), information warfare (IW), decoys, conventional ballistics and nuclear/biological/chemical (NBC) effects on Army soldiers and systems. The PE work efforts provide U.S. Army decision makers, materiel and combat developers, system users, and independent evaluators critical soldier and system survivability analyses that quantify the soldier/system's survivability effectiveness in battlefield threat environments. Recommendations are provided to the materiel and combat developers on how to mitigate soldier/system deficiencies and enhance their survivability.

Page 1 of 18 Pages

Exhibit R-2 (PE 0605604A)

1150

Item 120

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		
6 - Management and Support	0605604A Survivability/Lethality Analysis		
<p>This PE funds civilian salaries, travel, development and maintenance of equipment and facilities, general management, administrative and contractor support required for program execution. The U.S. Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate (SLAD) conducts this effort. Effective in FY 1998, all ARL Survivability/Lethality Analysis Directorate (SLAD) evaluation functions in support of survivability/lethality testing will be financed through Project D734 under the direction of OPTEC. This PE supports Headquarters, Department of the Army (HQDA), Program Executive Offices (PEOs), Program Managers (PMs), and independent evaluators with EW, chemical, biological, nuclear, and ballistic expertise to conduct special studies, support Test Integration Working Groups (TIWG) and program reviews, review acquisition documentation, provide government testers with technical support, and support milestone decision reviews; and is appropriately funded in Budget Activity 6.</p>			
		Page 2 of 18 Pages	Exhibit R-2 (PE 0605604A)

Item 120

1151

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605604A Survivability/Lethality Analysis								D670	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D670	Emerging Technology Systems	4568	5115	5759	2583	3055	3171	3298	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Project D670 - Emerging Technology Systems: This project performs integrated survivability/lethality analyses for the category of systems which include Horizontal Technology Integration systems, Advanced Technology Demonstration initiatives, and proposed survivability enhancements to weapon platforms. Survivability deficiencies are identified, and recommendations are made to Program Executive Officers and Program Managers (PEOs/PMs) to provide hardening fixes early in program development. Work is accomplished through threat research, theoretical &amp; engineering analyses, laboratory experiments, models, simulations, and field investigations. This effort also supports HQDA, independent evaluators, and PEOs/PMs with technical expertise in electronic warfare (EW), ballistics, chemical/biological contamination &amp; decontamination, and meteorology to conduct special studies and to support Test Integration Working Groups (TIWGs), weapon system program reviews, acquisition documentation reviews, and Government testers. This project also provides oversight of the Army's Electromagnetic Environmental Effects (E3) Program. Horizontal Technology Integration systems include 2nd Generation FLIR (2nd GEN FLIR), Battlefield Combat Identification System (BCIS), Global Positioning System (GPS), and Enhanced Position Location Reporting System (EPLRS). Advanced Technology Demonstration initiatives include Battlefield Combat Identification (BCID), Composite Armored Vehicle (CAV), Target Acquisition, Hit Avoidance, Direct Fire Lethality, and Future Scout &amp; Cavalry System (FCSC). Proposed survivability enhancements to weapon platforms include advanced armament technologies, defensive aide suites (DAS), missile countermeasure devices (MCD), emerging propellant technologies, advanced propulsion systems, advanced electronics, and improved spall liners in combat vehicles.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2306 Conducted EW vulnerability assessments to support integrated survivability and lethality analyses of emerging technology systems and horizontal technology applications. Developed necessary test beds to conduct laboratory and field investigations, and prepare interim survivability analysis reports. Supported the Army's E3 program.</li> <li>1382 Conducted ballistic effects investigations, developed system description models, performed damage simulations, and collected experimental data to support integrated survivability and lethality analysis reports.</li> <li>880 Conducted engineering investigations addressing nuclear hardening and survivability, chemical and biological warfare contamination and decontamination, and dirty battlefield conditions to support integrated survivability/lethality analyses of emerging technology systems and horizontal technology applications. Developed necessary test beds to conduct laboratory and field investigations, and prepared interim survivability analysis reports.</li> </ul> <p>Total 4568</p>											

Project D670

Page 3 of 18 Pages

Exhibit R-2 (PE 0605604A)

1152

Item 120

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605604A Survivability/Lethality Analysis</b>	<b>D670</b>	
<b>FY 1998 Planned Program:</b>			
• 2512	Perform integrated EW survivability and lethality investigations and analyses of emerging technology systems, including performance predictions of hit avoidance concepts (laser/missile warning receivers, decoys, obscurants) & the effect of obscured atmosphere on the propagation of missile plume signatures for defensive aided suites, and recommendations for Electronic Counter Counter Measure (ECCM) enhancements. Support the Army's E3 program, and provide E3 shielding implications for composite materials for a ground system in development.		
• 1370	Perform ballistic effects investigations and survivability/lethality analyses of emerging technology systems, including the residual aerodynamic & structural properties of damaged composite rotary blades, the residual performance of novel vehicle drive trains & electro-optical components, blast effects of select mines, and vulnerabilities with Army's air fleet's transition to JP-8 fuel.		
• 1105	Provide engineering-based predictions of chemical and biological warfare contamination & decontamination and dirty battlefield conditions to support integrated survivability/lethality analyses of emerging technology systems and horizontal technology applications. Complete model to predict chemical infiltration hazards to crew & equipment inside a combat vehicle, and predict the effects of chemical agents & decontaminates on materials to obviate the need for testing all new candidate materials.		
• 128	Small Business Innovative Research/Small Business Technology Transfer Programs		
Total	5115		
<b>FY 1999 Planned Program:</b>			
• 3047	Conduct EW vulnerability investigations and analyses to support integrated survivability and lethality analyses of advanced 2nd and 3rd generation emerging technology and horizontal technology applications. Prepare interim survivability analysis reports		
• 1463	Perform ballistic effects investigations and survivability/lethality analyses of candidate emerging technologies most influential on future system designs, including advanced armors (such as active protection systems), advanced armaments (such as electric armaments and electro thermal chemical), advanced propellants, and advanced vehicle propulsion. Prepare interim survivability analysis reports.		
• 1249	Conduct vulnerability analysis of Army's digitized battlefield systems to radio frequency (RF) weapons. Identify possible countermeasure to threat RF weapons. Support the Army E3 program, and expand E3 predictive capabilities for other composite materials.		
Total	5759		
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		4776	5278
Adjustments to Appropriated Value		4879	5278
FY 1999 President's Budget		-311	-163
		4568	5115
			5759
Change Summary Explanation: Funding - FY 99 Funds (+1000) - funding provides support for vulnerability analysis of digitized force against Radio Frequency Weapons.			
Project D670		Exhibit R-2 (PE 0605604A)	
		Page 4 of 18 Pages	
		1153	
		Item 120	

## UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605604A Survivability/Lethality Analysis								D671	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D671	Air Defense/Missile Defense Systems	5443	5742	5779	3220	3643	3785	3940	Continuing	Continuing	
<p><b>A. Mission Description and Justification: Project D671 - Air Defense/Missile Defense Systems:</b> Provides the survivability/lethality analysis of U.S. Army air defense and missile defense systems to the full spectrum of battlefield threats and recommends fixes to improve their battlefield survivability. The results are used by each Project Manager (PM) and the Program Executive Officer (PEO) to direct weapon system development efforts and structure product improvement programs; by the independent evaluator when they provide system evaluations in support of milestone decisions; by the user to develop survivability/lethality requirements, doctrine and tactics; and by decision makers in formulating program/production decisions. Anti-Radiation Missile (ARM) Counter-Arm efforts assess threat technologies against, THAAD and National Missile Defense (NMD), PATRIOT, Medium Extended Air Defense System (MEADS), and FAAD-C21 ground based sensors. Also funds salaries, travel, equipment/facilities, and management/administrative support needed to execute the program.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 3025 Conducted electronic warfare vulnerability assessments for PATRIOT, Stinger, Sentinel, LINEBACKER, THAAD and National Missile Defense (NMD) in development, undergoing P3I, or have been recently fielded.</li> <li>• 755 Conducted chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army air defense and missile defense systems.</li> <li>• 864 Conducted ballistic survivability/lethality analysis for U.S. Army air defense and missile defense systems.</li> <li>• 250 Provided integrated survivability/lethality analyses to support scheduled air defense/missile defense program decision milestones in FY 97.</li> <li>• 549 Supported Consolidated Army Evaluation Function.</li> <li>• Total 5443</li> </ul>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 3507 Conduct electronic warfare vulnerability/survivability analysis and assessment of U.S. Army air defense and missile defense systems that are in development, undergoing P3I, or have been recently fielded to include PATRIOT, MEADS, Stinger, GBS, LINEBACKER, THAAD, and NMD.</li> <li>• 761 Conduct chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army air defense and missile defense systems.</li> <li>• 955 Conduct ballistic survivability/lethality analysis for U.S. Army air defense and missile defense systems.</li> <li>• 375 Provide integrated survivability/lethality analyses to support scheduled air defense/missile defense program decision milestones in FY 98.</li> <li>• 144 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>• Total 5742</li> </ul>											

Project D671

Page 5 of 18 Pages

Exhibit R-2 (PE 0605604A)

1154

Item 120

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
6 - Management and Support	0605604A Survivability/Lethality Analysis	D671																					
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 3629 Conduct electronic warfare vulnerability assessments for developmental U.S. Army air defense and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems. Provide interim susceptibility reports. Recommend ECCM enhancements.</li> <li>• 900 Conduct chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army air defense and missile defense systems.</li> <li>• 950 Conduct ballistic survivability/lethality analysis for U.S. Army air defense and missile defense systems.</li> <li>• 300 Provide integrated survivability/lethality analyses to support scheduled air defense/missile defense program decision milestones in FY 99.</li> </ul> <p>Total 5779</p>																							
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>5687</td> <td>5950</td> <td>5779</td> </tr> <tr> <td>Appropriated Value</td> <td>5818</td> <td>5950</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-375</td> <td>-208</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>5443</td> <td>5742</td> <td>5779</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	5687	5950	5779	Appropriated Value	5818	5950		Adjustments to Appropriated Value	-375	-208		FY 1999 President's Budget	5443	5742	5779
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	5687	5950	5779																				
Appropriated Value	5818	5950																					
Adjustments to Appropriated Value	-375	-208																					
FY 1999 President's Budget	5443	5742	5779																				
<p>Change Summary Explanation: Funding: FY1998 funds decreased (-208) for undistributed Congressional reductions.</p>																							

Project D671

Page 6 of 18 Pages

Exhibit R-2 (PE 0605604A)

1155

Item 120

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 6 - Management and Support

PE NUMBER AND TITLE

0605604A Survivability/Lethality Analysis

PROJECT

D672

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D672 Aviation Systems	3507	3220	3174	1877	2027	2104	2188	Continuing	Continuing

**A. Mission Description and Justification:** Project D672 - Aviation Systems: Project investigates the Survivability/Lethality/Vulnerability (SLV) of Army aviation systems to the full spectrum of battlefield threats. Aircraft SLV deficiencies are identified and hardening recommendations identified as appropriate. SLV analysis directly supports major decision milestone reviews, acquisition documentation, test and evaluation master plans, and cost/operational effectiveness analyses.

**FY 1997 Accomplishments:**

- 1894 Conducted electronic warfare (EW) and countermeasures vulnerability assessment AH-64D Longbow Apache, OH-58D Kiowa Warrior, MH-60K & MH-47E Special Operations Aircraft (SOA) which are in development, undergoing P3I, or have been recently fielded. Conducted assessment of RAH-66 Comanche to projected EW threats.
- 510 Completed ballistic survivability/lethality analysis for Longbow Apache and SOA.
- 555 Conducted chemical, biological, nuclear, and atmospheric effects survivability analysis for Comanche, MH-60K, SOA, and Kiowa Warrior.
- 548 Supported Consolidated Army Evaluation Function with Live Fire strategy formulation.
- Total 3507

**FY 1998 Planned Program:**

- 1776 Perform electronic warfare vulnerability analysis and assessment of U.S. Army aviation systems and aviation support equipment to include: AH-64D Longbow Apache; RAH-66 Comanche; Suite of Integrated RF Countermeasures; Suite of Integrated IR Countermeasures.
- 690 Complete ballistic survivability/lethality analysis of UH-60Q Ambulance and Comanche. Conduct ballistic vulnerability analysis of Improved Cargo Helicopter (ICH)
- 673 Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for Comanche and Longbow Apache.
- 81 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 3220

**FY 1999 Planned Program:**

- 1695 Continue electronic warfare vulnerability assessment for aviation systems and aviation support equipment that are in development, undergoing P3I, or have been recently fielded, including AH-64D Longbow Apache, RAH-66 Comanche, CH-47D Chinook, Suite of Integrated RF Countermeasures, and Suite of Integrated IR Countermeasures. Provide susceptibility reports. Provide electronic counter-countermeasures recommendations.
- 798 Conduct the ballistic survivability/lethality analysis for Comanche and ICH.
- 681 Complete chemical, biological, nuclear, and atmospheric effects survivability analysis for Comanche and aviation support systems.
- Total 3174

Project D672

Page 7 of 18 Pages

Exhibit R-2 (PE 0605604A)

1156

Item 120

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605604A Survivability/Lethality Analysis	D672	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	3660	3323	3174
Adjustments to Appropriated Value	3739	3323	
FY 1999 President's Budget	-232	-103	
	3507	3220	3174
Project D672		Exhibit R-2 (PE 0605604A)	
Page 8 of 18 Pages		Item 120	

1157

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605604A Survivability/Lethality Analysis

D675

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D675 Force XXI and C4I/IEW Systems	4709	4362	4033	2227	2625	2728	2841	Continuing	Continuing

**A. Mission Description and Justification: Project D675 - Force XXI & C4I/IEW Systems:** Supports survivability analysis, information warfare, and information operations of Army communications, electronic equipment and Digitized Force against the full spectrum of friendly and enemy threats. Provides field threat environment support for Electronic Warfare Vulnerability Analysis (EWVA). Analyzes vulnerabilities of foreign threat weapons and command, control, communications, computers and intelligence (C4I) and Intelligence Electronic Warfare (IEW) systems to U.S. Army EW systems. Provides threat weapon electronic design data to countermeasure developers and technical capability information to the intelligence community. Supports Army initiatives in vulnerability reduction of C4I/IEW systems against the full spectrum of battlefield threats, including information warfare. Provides analysis for understanding potential vulnerabilities of digitized Force XXI developmental systems. Supports Army Warfighting Experiments and associated Information Operations Vulnerability Assessments for Force XXI Architecture.

**FY 1997 Accomplishments:**

- 1421 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army command and control systems. This effort supported the Advanced Field Artillery Tactical Data System, Common Hardware and Software, Maneuver Control System, FAAD-C2I, Standard Integrated Command Post Shelter, All Source Analysis System, Combat Service Support Control System and Force Battle Command Brigade and Below (FBCB2) (Applique).
- 1330 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army communications systems on SINGARS, EPLRSGPS, Mobile Subscriber Equipment, Single Channel Anti-jam Man Portable radio, Secure Mobile Anti-jam Reliable Tactical Terminal, Next Tactical Data Radio, and Enhance Manpack UHF Terminal.
- 1433 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army IEW systems -- BCIS, Joint Surveillance Target Attack Radar System/Ground Station Module, improved FLIR, and enhanced Firefinder radar.
- 113 Provided integrated survivability/lethality analyses to support OPTEC for scheduled C4I/IEW systems program decision milestones in FY 97.
- 412 Supported Consolidated Army Evaluation Function.
- Total 4709

**FY 1998 Planned Program:**

- 1915 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army command and control systems. Conduct information operations vulnerability analysis. This effort supports the Advanced Field Artillery Tactical Data System, Common Hardware and Software, Maneuver Control System, FAAD-C2I, Standard Integrated Command Post Shelter, All Source Analysis System, Combat Service Support Control System and FBCB2 (Applique).

Project D675

Page 9 of 18 Pages

Exhibit R-2 (PE 0605604A)

1158

Item 120

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																						
<b>6 - Management and Support</b>	<b>0605604A Survivability/Lethality Analysis</b>	<b>February 1998</b>	<b>D675</b>																				
<p><b>FY 1998 Planned Program (continued)</b></p> <ul style="list-style-type: none"> <li>1400 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army communications systems such as SINGGARS, EPLRS, GPS, Mobile Subscriber Equipment, Single Channel Anti-jam Man Portable radio, Secure Mobile Anti-jam Reliable Tactical Terminal, and the Next Tactical Data Radio.</li> <li>738 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army IEW systems such as the BCIS, Joint Surveillance Target Attack Radar System/Ground Station Module and 2<sup>nd</sup> Generation FLIR enhanced Firefinder radar.</li> <li>200 Provide integrated survivability/lethality analyses to support scheduled C4I/IEW systems program decision milestones in FY 98.</li> <li>109 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 4362</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1705 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army command and control systems. Conduct information operations vulnerability analysis. This effort supports the Advanced Field Artillery Tactical Data System, Common Hardware and Software, Maneuver Control System, FAAD-C2I, Standard Integrated Command Post Shelter, All Source Analysis System, Combat Service Support Control System, and FBCB2 (Applique).</li> <li>1405 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army communications systems such as Mobile Subscriber Equipment, Single Channel Anti-jam Man Portable radio, Secure Mobile Anti-jam Reliable Tactical Terminal, and the Next Tactical Data Radio.</li> <li>776 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army IEW systems such as the BCIS, Joint Surveillance Target Attack Radar System/Ground Station Module, and enhanced Firefinder radar.</li> <li>147 Provide integrated survivability/lethality analyses to support scheduled C4I/IEW systems program decision milestones in FY 99.</li> <li>Total 4033</li> </ul> <p><b>B. Project Change Summary</b></p> <p>FY 1998/1999 President's Budget</p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>Appropriated Value</td> <td>4921</td> <td>4501</td> <td>4033</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>5027</td> <td>4501</td> <td></td> </tr> <tr> <td></td> <td>-313</td> <td>-139</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>4714</td> <td>4362</td> <td>4033</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Appropriated Value	4921	4501	4033	Adjustments to Appropriated Value	5027	4501			-313	-139		FY 1999 President's Budget	4714	4362	4033
	FY 1997	FY 1998	FY 1999																				
Appropriated Value	4921	4501	4033																				
Adjustments to Appropriated Value	5027	4501																					
	-313	-139																					
FY 1999 President's Budget	4714	4362	4033																				

Project D675

Page 10 of 18 Pages

Exhibit R-2 (PE 0605604A)

1159

Item 120

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 6 - Management and Support

PE NUMBER AND TITLE

## 0605604A Survivability/Lethality Analysis

PROJECT

D677

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D677	Ground Combat Systems	5007	5030	5403	2920	3376	3510	3656	Continuing	Continuing

**A. Mission Description and Justification:** Project D677 - Ground Combat Systems: Project investigates the survivability and vulnerability of Army ground combat systems to the full spectrum of battlefield threats. Analysis will support weapon requirements, test and evaluation master plans, cost/operational effectiveness analysis, and major milestone decisions.

**FY 1997 Accomplishments:**

- 1073 Conducted the electronic warfare vulnerability assessment for Crusader, Bradley A3, Command and Control Vehicle, ABRAMS M1A2, Breacher, Heavy Assault Bridge.
- 1747 Conducted the ballistic survivability/lethality analysis for U.S. Army ground combat systems; supported Future Scout Cavalry System decision reviews.
- 1202 Conducted the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army ground combat systems.
- 209 SLAD2000 pilot program. Developed methodology for support of integrated analyses - Defense Aided Suite Program.
- 227 Supported susceptibility analyses of survivability suite components for ground combat systems.
- 549 Supported Consolidated Army Evaluation Function.
- Total 5007

**FY 1998 Planned Program:**

- 1234 Conduct integrated electronic warfare vulnerability analysis and assessment of U.S. Army ground combat systems - Future Scout Cavalry System, Crusader, Bradley A3, Command and Control Vehicle, ABRAMS M1A2, Breacher. Provide interim susceptibility reports. Recommend EW survivability enhancements.
- 2072 Conduct the ballistic survivability/lethality analysis for U.S. Army ground combat systems.
- 1340 Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army ground combat systems.
- 258 Provide integrated survivability/lethality analyses to support scheduled ground combat systems program decision milestones in FY 98.
- 126 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 5030

Project D677

Page 11 of 18 Pages

Exhibit R-2 (PE 0605604A)

1160

Item 120

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605604A Survivability/Lethality Analysis</b>	<b>D677</b>	
<b>FY 1999 Planned Program:</b>			
• 1410	Conduct the electronic warfare vulnerability assessment for U.S. Army ground combat systems such as Crusader, Bradley A3, Command and Control Vehicle, ABRAMS 2000, Breacher.		
• 2318	Conduct the ballistic survivability/lethality analysis for U.S. Army ground combat systems.		
• 1405	Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army ground combat systems.		
• 270	Provide integrated survivability/lethality analyses to support scheduled ground combat systems program decision milestones in FY 99.		
Total	5403		
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	5225	5190	5403
Adjustments to Appropriated Value	5337	5190	
FY 1999 President's Budget	-330	-160	
	5007	5030	5403

Project D677

Page 12 of 18 Pages

Exhibit R-2 (PE 0605604A)

1161

Item 120

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	
BUDGET ACTIVITY		PROJECT	
6 - Management and Support		D678	
PE NUMBER AND TITLE		0605604A Survivability/Lethality Analysis	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate
D678 Munitions Systems		5365	5440
		FY 1999 Estimate	FY 2000 Estimate
		5615	3115
		FY 2001 Estimate	FY 2002 Estimate
		3569	3706
		FY 2003 Estimate	3855
		Cost to Complete	Continuing
		Total Cost	Continuing

**A. Mission Description and Justification: Project D678 - Munitions Systems:** This project funds the investigation of the lethality/vulnerability of Army fire support smart weapons (smart and conventional) to the full spectrum of battlefield threats. The analysis is integrated across all battlefield threats, i.e., conventional ballistic, electronic warfare, directed energy, nuclear weapons effects, and nuclear and chemical/biological contamination effects. This work is accomplished through theoretical and engineering analyses, signature measurements, modeling, simulations, laboratory experiments, and field investigations.

**FY 1997 Accomplishments:**

- 2253 Conducted integrated electronic warfare vulnerability assessment for advanced developmental U.S. Army conventional and smart munitions systems such as BAT, Hellfire Longbow Missile, Wide Area Mine, and Javelin and any associated pre-planned product improvement programs. Conducted electronic warfare vulnerability assessments of BAT P3I, STAFF, Enhanced Fiber Optic Guided Missile (EFOG-M), Follow on to Tube launched Optically tracked Wired guided munition (FOT TOW), and Multiple Launch Smart Tactical Rocket (MSTAR).
- 930 Conducted the ballistic survivability/lethality analysis for U.S. Army munitions systems.
- 813 Conducted the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army munitions systems.
- 820 Provided integrated survivability/lethality analyses to support scheduled munitions systems program decision milestones in FY 97.
- 549 Supported Consolidated Army Evaluation Function.
- Total 5365

**FY 1998 Planned Program:**

- 2569 Conduct the electronic warfare vulnerability assessment for developmental U.S. Army munitions systems and any associated P3I. Conduct electronic warfare countermeasure analysis/support for U.S. Army munitions to include FOT TOW, MSTAR, Precision Guided Mortar Munition (PGMM), and EFOG-M.
- 1114 Conduct the ballistic survivability/lethality analysis for U.S. Army munitions systems.
- 1220 Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army munitions systems.
- 400 Provide integrated survivability/lethality analyses to support scheduled munitions systems program decision milestones in FY 98.
- 137 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 5440

Project D678

Page 13 of 18 Pages

Exhibit R-2 (PE 0605604A)

Item 120



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605604A Survivability/Lethality Analysis</b>	<b>D678</b>																					
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2642 Conduct the electronic warfare vulnerability assessment for U.S. Army munitions systems such as Army Tactical Missile System (ATACMS) with smart payloads such as BAT and BAT P3I, Hellfire-Longbow Missile, STAFF, Wide Area Mine (WAM)/WAM PIP, Javelin, EFOG-M, FOT TOW, Sense and Destroy Armor (SADARM) P3I, and MSTAR.</li> <li>• 1324 Conduct the ballistic survivability/lethality analysis for U.S. Army munitions systems.</li> <li>• 1249 Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army munitions systems.</li> <li>• 400 Provide integrated survivability/lethality analyses to support scheduled munitions systems program decision milestones in FY 99.</li> </ul> <p>Total 5615</p>																							
<p><b>B. Project Change Summary</b></p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>5609</td> <td>5613</td> <td>5615</td> </tr> <tr> <td>Appropriated Value</td> <td>5729</td> <td>5613</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-364</td> <td>-173</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>5365</td> <td>5440</td> <td>5615</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	5609	5613	5615	Appropriated Value	5729	5613		Adjustments to Appropriated Value	-364	-173		FY 1999 President's Budget	5365	5440	5615
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	5609	5613	5615																				
Appropriated Value	5729	5613																					
Adjustments to Appropriated Value	-364	-173																					
FY 1999 President's Budget	5365	5440	5615																				

Project D678

Page 14 of 18 Pages

Exhibit R-2 (PE 0605604A)

1163

Item 120

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE							
BUDGET ACTIVITY		PROJECT							
6 - Management and Support		D679							
PE NUMBER AND TITLE		0605604A Survivability/Lethality Analysis							
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D679 Soldier Systems	763	800	735	421	449	463	478	Continuing	Continuing
<p><b>A. Mission Description and Justification: Project D679 - Soldier Systems:</b> Supports individual-soldier related programs and material to maximize survivability and functionality under severe combat environments of chemical-biological warfare, nuclear, electronic and information warfare, countermeasures, directed energy and ballistics. Provides for technical investigations and analyses into the survivability of soldiers in various combat environments with many types of equipment. Provides administration of the MANPRINT Soldier Survivability (SSv) Domain. Broad areas addressed by SSv are: Fratricide reduction; soldier detectability reduction; attack prevention if detected; damage prevention; medical injury reduction; the reduction of mental and physical fatigue. The survivability of soldier systems is investigated and reported to milestone decision reviews.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>392 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for the U.S. Army Land Warrior System (Computer and Communication System, Weapon System, Protective Clothing and Individual Equipment, Chem/Bio Mask, and Integrated Headgear), Force XXI Land Warrior ACTD components and the Air Warrior System.</li> <li>85 Coordinated preparation and direct execution of MANPRINT Soldier Survivability Assessments and Reports.</li> <li>47 Sustained international soldier activities (NATO); provide chem/bio/physiology expertise for operations other than war and less-than-lethal efforts.</li> <li>102 Provided integrated survivability/lethality analyses to support scheduled soldier systems program decision milestones in FY 97.</li> <li>137 Supported Consolidated Army Evaluation Function through development of Survivability Criteria, Measure of Effectiveness, measures of Performance, and Data Elements.</li> </ul> <p>Total 763</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>494 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for the U.S. Army Land Warrior and Air Warrior Systems (Computer and Communication System, Weapon System, Protective Clothing and Individual Equipment, Chem/Bio Mask, and Integrated Headgear), Force XXI Land Warrior ACTD components, the Mounted Warrior System and Military Operations in Urban Terrain ACTD.</li> <li>184 Coordinate preparation and direct execution of MANPRINT Soldier Survivability Assessments and Reports.</li> <li>27 Sustainment of international soldier activities (NATO); provide chem/bio/physiology expertise for operations other than war and less-than-lethal efforts.</li> <li>75 Provide integrated survivability/lethality analyses to support scheduled soldier systems program decision milestones in FY 98.</li> <li>20 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 800</p>									

Project D679

Page 15 of 18 Pages

Exhibit R-2 (PE 0605604A)

1164

Item 120

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE	PROJECT																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																						
6 - Management and Support	0605604A Survivability/Lethality Analysis		D679																				
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 422 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for the U.S. Army Land Warrior and Air Warrior Systems (Computer and Communication System, Weapon System, Protective Clothing and Individual Equipment, Chem/Bio Mask, and Integrated Headgear), Force XXI Land Warrior ACTD components, the Mounted Warrior System and Military Operations in Urban Terrain ACTD.</li> <li>• 166 Coordinate preparation and direct execution of MANPRINT Soldier Survivability Assessments and Reports.</li> <li>• 47 Sustainment of international soldier activities (NATO); provide chem/bio/physiology expertise for operations other than war and less-than-lethal efforts</li> <li>• 100 Provide integrated survivability/lethality analyses to support scheduled soldier systems program decision milestones in FY 99.</li> </ul> <p>Total 735</p> <p><b>B. Project Change Summary</b></p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>797</td> <td>825</td> <td>735</td> </tr> <tr> <td>Appropriated Value</td> <td>814</td> <td>825</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-51</td> <td>-25</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>763</td> <td>800</td> <td>735</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	797	825	735	Appropriated Value	814	825		Adjustments to Appropriated Value	-51	-25		FY 1999 President's Budget	763	800	735
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	797	825	735																				
Appropriated Value	814	825																					
Adjustments to Appropriated Value	-51	-25																					
FY 1999 President's Budget	763	800	735																				
Project D679	Page 16 of 18 Pages	Exhibit R-2 (PE 0605604A)	Item 120																				

1165

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605604A Survivability/Lethality Analysis								D734	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D734	Survivability Evaluation	0	1599	0	0	0	0	0	Continuing	Continuing	

**A. Mission Description and Justification:** Project D734 - Survivability Evaluation: Effective in FY 1998, all U.S. Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate (SLAD) evaluation functions in support of survivability/lethality testing will be financed through Project D734 under the direction of the U.S. Army Operational Test and Evaluation Command (OPTEC). Starting in FY 1999 funding for Project D734 has been transferred to PE 0605716A Army Evaluation Center established under OPTEC to perform the Army's consolidated developmental and operational evaluation function. FY 1998 funding provides for evaluation of soldier and materiel system survivability into an integrated Army evaluation supporting decision-makers at milestone reviews. It includes the planning and coordination of developmental tests, experiments, and subsequent evaluation of results to determine system survivability in battlefield threat environments. Evaluators will develop the strategy and incorporate SLAD efforts to ensure that electronic warfare (EW), information warfare (IW), conventional ballistics, nuclear, chemical, biological, electromagnetic environmental effects (E3), atmospheric/obscuration and meteorological effects on soldier/system survivability are properly addressed. Evaluation results will be incorporated into a single Army evaluation and presented at all acquisition milestones.

**FY 1997 Accomplishments:** Project funded by SLAD under other projects in this PE.

**FY 1998 Planned Program:**

- 1559 Conduct integrated survivability evaluations for Army weapon systems and Automated Information Systems for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. Develop the evaluation strategy, design technical and operational tests and evaluate the test results to address the survivability and lethality factors pertinent to the decision process such as: soldier survivability, performance in countermeasures, system survivability. As the Army lead for Live Fire Test and Evaluation, plan and execute the Army Live Fire Test and Evaluation program for required developmental systems. Specific efforts include: conduct evaluations of Crusader, Armored Scout Vehicle (ASV), Army Tactical Missile System Block II (ATACMS Blk II), Hellfire, Longbow, Army TACMS Block II/BAT P31 (BAT P31), FOT TOW, and Wide Area Munition (WAM) Milestone III results; prepare System Evaluation Plans for Multiple Launch Rocket System (MLRS A1), Bradley Fire Support Team (BFIST), Breacher, Bradley Fighting Vehicle System, Command and Control System (C2V), Command, Control, Communication, and Computer Systems (C4I), Suite of Integrated RF Countermeasures (SIRFCM), and Search and Destroy Armor (SADARM). Efforts include costs for 18 civilian authorizations.
- 40 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 1599

**FY 1999 Planned Program:** Project consolidated under newly established PE 0605716A Army Evaluation Center under OPTEC.

Project D734

Page 17 of 18 Pages

Exhibit R-2 (PE 0605604A)

1166

Item 120

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605604A Survivability/Lethality Analysis	D734	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		0	1650
Adjustments to Appropriated Value		0	1650
FY 1999 President's Budget		0	-51
			1599
			0
Change Summary Explanation: Funding : FY 99 Funds (-1180) transferred to PE 0605716A Army Evaluation Center.			

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT				
6 - Management and Support		0605605A DOD High Energy Laser System Test Facility (HELSTF)		February 1998		DE97				
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE97	DoD High Energy Laser Systems Test Facility (HELSTF)	29227	28965	15022	15086	15150	15192	15281	Continuing	Continuing
<p><b>A. Mission Description and Budget Item Justification - Project DE97 DoD High Energy Laser Systems Test Facility (HELSTF):</b> The HELSTF provides a broad based high energy laser (HEL) RDTE capability at White Sands Missile Range, NM in support of Tri-Service HEL research and development and damage, vulnerability, and lethality laser testing. The HELSTF's laser development support capabilities include a certified laser test range, a fully integrated laser support facility, an extensive array of fully instrumented test sites and the Sea Lite Beam Director (SLBD). This multiple use facility supports testing of laser effects for targets ranging from scaled laboratory up through full scale flying target tests. Test facility support operations are required for general research and development; therefore, this PE is appropriate for inclusion in Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>23509 Performed required site operations and maintenance activities to maintain laser system testing infrastructure in support of NAUTILUS, Air Force Airborne Laser Program and other Space-based Laser programs.</li> <li>5718 Initiated the Solid State Laser Demonstration Program.</li> <li>Total 29227</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>14147 Perform Operation and Maintenance and base operations support functions in support of the Army, Department of Defense and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (Tactical High Energy Laser, Free Electron Laser, Air Force Airborne Laser, and other space-based laser programs).</li> <li>9461 Conduct field testing of the THEL Advanced Concept Technology Demonstrator.</li> <li>4668 Continue the Solid State Laser Demonstration Program. Complete single module device &amp; beam distortion correction. Manufacture &amp; Integrate the 3 module device. Complete testing of Army Pointer Tracker (APT) Backup Primary Mirror. Perform dynamic target tracking with APT.</li> <li>689 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> <li>Total 28965</li> </ul>										

Project DE97

Page 1 of 2 Pages

Exhibit R-2 (PE 0605605A)

Item 121

1168

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

6 - Management and Support

0605605A DOD High Energy Laser System Test  
Facility (HELSTF)

DE97

## FY 1999 Planned Program:

- 9976 Perform Operation and Maintenance and base operations support functions in support of the Army, Department of Defense and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (Tactical High Energy Laser, Free Electron Laser, Air Force Airborne Laser, and other space-based laser programs).
- 5046 Operations, maintenance and upgrades on organic high energy lasers and associated optical trains. Support ballistic missile defense signature data collection efforts.

Total 15022

## B. Project Change Summary

FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	29974	14952	14976
Adjustments to Appropriated Value	30667	29952	
FY 1999 President's Budget	-1440	-987	
	29227	28965	15022

Change Summary Explanation: Funding: FY 1998 increase (+13973); due to a (+15000) Congressional increase and (-987) undistributed Congressional reductions.

Project DE97

Page 2 of 2 Pages

Exhibit R-2 (PE 0605605A)

1169

Item 121

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605606A Aircraft Certification								D092	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D092	Aircraft Certification	2415	2828	2924	2935	2976	3209	3293	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification</b> Performs all engineering functions essential for certifying the airworthiness of assigned Army aircraft. Performs safety-of-flight investigations/assessments and issues messages to the field. Manages/executes the Army's Aeronautical Design Standards (ADS) Program; ADS is a continuously evolving process incorporating revisions for each change to the standard design of an aircraft system. Manages airworthiness approval of new vendor qualification/testing on fielded aircraft and materiel changes for all assigned Army aircraft systems. Provides airworthiness-engineering support to the Army Aviation Program Executive Office and the Army Aviation and Missile Command Program/Product Manager requirements for major development/modification and any future system/subsystems. Manages the test and evaluation process to support the airworthiness qualification of developmental and fielded aircraft systems. This project funds activities required for general research and development on support of aircraft qualification. Since these activities are not allocable to specific R&amp;D missions, this project is appropriately funded in Budget Activity 6.</p> <p><b>Acquisition Strategy:</b> Not Applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>342 Executed technical and airworthiness qualification mission for PEO Aviation force modernization aircraft systems.</li> <li>596 Conducted safety-of-flight investigations/assessments to include PEO Aviation force modernization aircraft systems.</li> <li>143 Executed the Army Aeronautical Design Standards Program.</li> <li>880 Provided continuing engineering support for technology upgrades to PEO Aviation force modernization aircraft systems.</li> <li>454 Provided test management capability for PEO Aviation Program/Project/product managers.</li> <li>Total 2415</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>746 Manage/execute technical and airworthiness qualification mission for PEO Aviation force modernization aircraft systems.</li> <li>574 Continue to ensure safety-of-flight investigations/assessments to include PEO Aviation force modernization aircraft systems.</li> <li>149 Manage/execute the Army Aeronautical Design Standards Program.</li> <li>864 Provide continuing engineering support for technology upgrades to PEO Aviation force modernization aircraft systems.</li> <li>424 Continue to provide test management capability for PEO Aviation program/project/product managers.</li> <li>71 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> <li>Total 2828</li> </ul>											

Exhibit R-2 (PE 0605606A)

Page 1 of 2 Pages

Project D092

1170

Item 122

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT																				
<b>6 - Management and Support</b>		<b>0605606A Aircraft Certification</b>	<b>D092</b>																				
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 789 Manage/execute technical and airworthiness qualification mission for PEO Aviation force modernization aircraft systems.</li> <li>• 623 Continue to ensure safety-of-flight investigations/assessments to include PEO Aviation force modernization aircraft systems.</li> <li>• 150 Manage/execute the Army Aeronautical Design Standards Program.</li> <li>• 914 Provide continuing engineering support for technology upgrades to PEO Aviation force modernization aircraft systems.</li> <li>• 448 Continue to provide test management capability for PEO Aviation program/project/product managers.</li> </ul> <p>Total 2924</p>																							
<p><b>B. Project Change Summary</b></p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>2840</td> <td>2919</td> <td>2924</td> </tr> <tr> <td>Appropriated Value</td> <td>2905</td> <td>2919</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-490</td> <td>-91</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2415</td> <td>2828</td> <td>2924</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	2840	2919	2924	Appropriated Value	2905	2919		Adjustments to Appropriated Value	-490	-91		FY 1999 President's Budget	2415	2828	2924
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	2840	2919	2924																				
Appropriated Value	2905	2919																					
Adjustments to Appropriated Value	-490	-91																					
FY 1999 President's Budget	2415	2828	2924																				

Project D092

Page 2 of 2 Pages

Exhibit R-2 (PE 0605606A)

1171

Item 122

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605702A Meteorological Support to Research, Development, Testing & Evaluation Activities								D128	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D128 Meteorological Support to TECOM Activities		6278	6235	6691	6712	6911	7085	7270	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification:</b> Project D128 - Meteorological Support to Test and Evaluation Command (TECOM) Activities: Provides standard and specialized weather forecasts and data for test reports to satisfy Army/DoD RDT&amp;E-unique test requirements for modern weaponry, i.e., (1) Unique atmospheric analysis sampling to include atmospheric transmittance, extinction, optical scintillation, infrared temperature, aerosol/smoke cloud dispersion characteristics, ballistic meteorological measurements, snow characterization and crystal structure; (2) Unique consultation forecasting to include prediction of sound propagation for ballistic tests, specialized prediction of light level and target to background predictions for electro-optical testing and ballistic meteorology; (3) Advisory and warning products such as go-no-go advisories for ballistic and atmospheric probe missiles, smoke obscurant tests, hazard predictions for chemical agent munitions disposal, simulated nuclear blasts, and weather warnings for range/test safety. Provides technical support to Army Program Executive Officers (PEOs), Project Managers (PMs) and the Army test ranges. Develops methodologies and acquires instrumentation/systems that allow meteorological teams to support current and future Army/DoD RDTE requirements. This PE finances indirect meteorological support operating costs not billable to customers and replacement/upgrade of meteorological instrumentation. Direct costs for meteorological support services are not funded by this PE, but are borne by the customer (i.e. materiel developers and project/product managers). Includes research and development efforts directed towards support of installations or operations required for general research and development use; therefore, is appropriate to Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2952 Provided weather forecasts, severe weather/advisories, staff meteorological services, and atmospheric measurements in support of all Army/DoD tests and projects at 11 Army test sites/ranges and as safari to off range test sites.</li> <li>2330 Modernized operational equipment to meet customer requirements for meteorological support.             <ul style="list-style-type: none"> <li>- Completed Phase III (last) upgrade of Surface Automated Meteorological System (SAMS) to increase data transmission rates, and data reduction and analysis.</li> <li>- Electro-optical (EO) Instrumentation: Completed and fielded Small Portable Transmissometer Systems (SPOT) which measure IR, Near IR and Visible spectrum over 2Km. path length.</li> <li>- Sustainment of mobile systems.</li> <li>- Completed validation and fielding of atmospheric profilers.</li> <li>- Completed phase I, initial proof-of-concept, for Major Range and Test Facility Base (MRTFB) "4D" (x,y,z, time) Weather System (4DWX), a real-time, four dimensional integration of meteorological data from multiple and various sensor types to include EO and phenomena affecting weapons into a system that displays in a scale compatible with test needs for forecasts, go-no-go decisions, and allows for the replay of test conditions for forensic analyses of why a test may have failed.</li> </ul> </li> </ul>											

Project D128

Page 1 of 3 Pages

Exhibit R-2 (PE 0605702A)

1172

Item 123

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605702A Meteorological Support to Research, Development, Testing &amp; Evaluation Activities</b>	<b>D128</b>	
<p><b>FY 1997 Accomplishments: (continued)</b></p> <ul style="list-style-type: none"> <li>996 Provided program management for meteorological support to RDTE and technical review/assistance to ranges and meteorological teams. <ul style="list-style-type: none"> <li>- Weather forecast support systems/data.</li> <li>- Installed 3 National Weather Service "Next Generation Doppler Weather Radar" (NEXRAD) Principal User Processors (PUPS) at Redstone Technical Test Center (RTTC), White Sands Missile Range (WSMR), and Aberdeen Test Center (ATC).</li> </ul> </li> </ul> <p>Total 6278</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2920 Provide indirect costs for generating weather forecasts, severe weather warnings/advisories, staff meteorological services, and atmospheric measurements in support of all Army/DoD tests and projects at 10 Army test sites/ranges and as safari to off range test sites. (Ft. Hunter Liggett closed)</li> <li>2279 Modernize operational equipment to meet customer requirements for meteorological support. <ul style="list-style-type: none"> <li>- Sustainment of mobile systems.</li> <li>- GPS upgrades to upper air systems.</li> <li>- Install and evaluate auto-now casting (automated and precise forecasting of weather conditions starting "now" and continuing for 1 hour into the future) at WSMR.</li> </ul> </li> <li>1036 Install MRTFB "4DWX" weather system at Dugway Proving Ground (DPG). <ul style="list-style-type: none"> <li>- Provide program management for meteorological support to RDTE and technical review/assistance to ranges and meteorological teams.</li> <li>- Weather forecast support systems/data: Evaluate initial meteorological data sets for environmental modules to virtual testing.</li> <li>- Purchase and evaluate Commercial Off The Shelf (COTS) millimeterwave (MMW) instrumentation to determine the most effective and reliable equipment.</li> <li>- Evaluate MRTFB "4DWX" weather system at DPG. Initial installation of "4DWX" at ATC.</li> </ul> </li> </ul> <p>Total 6235 Fully funds indirect meteorological support operating costs and 66% of meteorological instrumentation requirements.</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>3037 Provide weather forecast, severe weather/advisories, staff meteorological services, and atmospheric measurements in support of all Army/DoD tests and projects at 10 Army test sites/ranges and as safari to off range test sites.</li> <li>2577 Modernize operational equipment to meet customer requirements for meteorological support. <ul style="list-style-type: none"> <li>- Electro-optical Instrumentation: purchase COTS MMW instrumentation in order to support testing of systems using MMW guidance sensors.</li> <li>- Sustainment of mobile systems and atmospheric profilers.</li> <li>- Integrate meteorological instrumentation into MRTFB "4DWX" Weather System at DPG.</li> <li>- Install MRTFB "4DWX" weather system at RTTC, complete ATC installation.</li> </ul> </li> </ul>			

Project D128

Page 2 of 3 Pages

Exhibit R-2 (PE 0605702A)

1173

Item 123

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605702A Meteorological Support to Research, Development, Testing &amp; Evaluation Activities</b>	<b>D128</b>																					
<p><b>FY 1999 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>1077 Provide program management for meteorological support to RDTE and technical review/assistance to ranges and meteorological teams. <ul style="list-style-type: none"> <li>- Weather forecast support systems/data: Improve/provide data sets for environmental modules to virtual testing.</li> <li>- Evaluate MRTFB "4DWX" at RTTC.</li> </ul> </li> </ul> <p>Total 6691 Fully funds indirect meteorological support operating costs and 66% of meteorological instrumentation requirements.</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>6348</td> <td>6434</td> <td>6658</td> </tr> <tr> <td>Appropriated Value</td> <td>6484</td> <td>6434</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-206</td> <td>-199</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>6278</td> <td>6235</td> <td>6691</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	6348	6434	6658	Appropriated Value	6484	6434		Adjustments to Appropriated Value	-206	-199		FY 1999 President's Budget	6278	6235	6691
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	6348	6434	6658																				
Appropriated Value	6484	6434																					
Adjustments to Appropriated Value	-206	-199																					
FY 1999 President's Budget	6278	6235	6691																				

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1175

Item 123

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 6 - Management and Support

PE NUMBER AND TITLE

0605706A Materiel Systems Analysis

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	14006	27755	9711	9736	11155	11481	11827	Continuing	Continuing
D026 Test Design and Evaluation	4161	0	0	0	0	0	0	Continuing	Continuing
M541 Materiel Systems Analysis	9845	8715	9711	9736	11155	11481	11827	Continuing	Continuing
M542 Major Systems Test, Design and Evaluation	0	19040	0	0	0	0	0	Continuing	Continuing

NOTE: Starting in FY 1999 funding for Project M542 Major Systems Test, Design and Evaluation has been transferred to newly established PE 0605716A Army Evaluation Center (AEC) under the US Army Operational Test and Evaluation Command (OPTEC) to perform the Army's consolidated developmental and operational evaluation function in support of the materiel acquisition process.

**Mission Description and Budget Item Justification:** The U.S. Army Materiel Systems Analysis Activity (AMSAA), as the Army's center for materiel systems analysis, provides the technical capability for the conduct of materiel systems analysis in support of Army decision makers throughout the materiel acquisition process. AMSAA responds with analyses required by the decision makers of the Army and the Department of Defense (DoD), the Program Executive Officers/Program Managers (PEO/PM), the Army's Independent Evaluator (Operational Test and Evaluation Command), and the Army analytical community. These projects fund efforts in support of operations required for general research and development and, since they are not allocable to specific research and development missions, are appropriately funded in Budget Activity 6.

In accomplishing its Materiel Systems Analysis Mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and existing systems. AMSAA conducts and supports systems analyses, such as: analyses of alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. These analyses are used by the Army Materiel Command (AMC) and Department of Army (DA) decision makers in deciding acquisition, procurement, and logistic decisions to provide quality equipment and procedures into the hands of the soldiers. AMSAA provides Army-wide support in the development of methodologies, models, simulations, and databases for use in its and other Army agencies' analyses. AMSAA supports the Army modeling and simulation (M&S) community by providing item level performance methodology/data, and standardized algorithms. AMSAA is the Army's designated source of item level performance data and, as such, develops, maintains, and provides a diverse range of data for its and other Army and DoD agencies' analyses. AMSAA is the Army's executive agent for its verification, validation, and accreditation program and for the Research, Development and Acquisition (RDA) domain as part of the Army's M&S Management Structure. AMSAA also develops reliability, availability, and maintainability (RAM) methodologies for use in its and other Army agencies' analyses.

FY 1998 funding in Project M542 supports the Army's independent technical evaluation role transferred from AMSAA to the Evaluation Analysis Center (EAC) under the U.S. Army Operational Test and Evaluation Command (OPTEC) as part of the Army consolidation of materiel evaluation. In the role of the independent technical evaluator, EAC provides the technical input to the single System Evaluation Report (SER) for Army acquisition programs. EAC provides technical evaluations for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive. EAC designs technical, developmental, and production tests to

Page 1 of 9 Pages

Exhibit R-2 (PE 0605706A)

1176

Item 124

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>
BUDGET ACTIVITY	PE NUMBER AND TITLE	
<b>6 - Management and Support</b>	<b>0605706A Materiel Systems Analysis</b>	
<p>address factors pertinent to the decision process, such as: technical maturity, technical risk, technical system performance, producibility, supportability, etc. EAC conducts technical assessments for milestone acquisition evaluations of system tests (e.g. performance, reliability, availability, and maintainability assessments). EAC has a lead role in the planning and execution of the Army Live Fire Tests through its test design and evaluation responsibilities. The Operational Evaluation Command (OEC) under OPTEC transferred from the Operations and Maintenance, Army (OMA) appropriation into Project M542 in FY 1998. OEC plans and conducts independent operational evaluations to determine and report the effectiveness and suitability of Army systems in support of the OPTEC test and evaluation role in Army acquisition and force development. OEC is responsible for operational T&amp;E and Continuous Evaluation of assigned Major Defense Acquisition Programs (MDAP), Major Automated Information Systems Review Council (MAISRC) programs, and In-Process Reviews (IPR).</p>		

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605706A Materiel Systems Analysis								D026	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D026	Test Design and Evaluation	4161	0	0	0	0	0	0	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> In FY1997, this project funded the U.S. Army Operational Test and Evaluation Command (OPTEC), Evaluation Analysis Center (EAC) mission of technical test design and evaluation. Provides for the Army's technical evaluation of developmental systems and tests for all major Army acquisition programs. Provides technical evaluations for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive (AAE). Designs technical, developmental, and production tests to address factors pertinent to the decision process, such as: technical maturity, technical risk, technical system performance, producibility, supportability, etc. Conducts performance and technical assessments for milestone acquisition evaluations of system tests (e.g. risk assessments and reliability, availability and maintainability assessments). Has lead role in the planning and execution of the Army live fire tests through its test design and evaluation responsibilities. This project funds the salaries of civilian employees assigned to the test design and evaluation mission. This project does not finance test facilities, test instrumentation or test equipment.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>4161 Provided evaluations for systems that are either in development phase or undergoing major materiel change/technology insertion. System evaluations supported program milestone decision reviews during FY 97. Evaluations in support of AAE decisions/DA IPRs include: Javelin, Army Tactical Missile System - Blocks IA and II (ATACMS), Extended Range Multiple Launch Rocket System (ER-MLRS), Enhanced Position Location and Reporting System (EPLRS), and the Wide Area Munitions (WAM) System. Developed System Evaluation Plans (SEPs) for tests to be conducted in FY 98 through FY 02. This effort included test design and evaluation planning for systems projected to undergo live fire testing in FY98-99. Early planning and analysis assured the early identification of requirements for long lead procurement of experimental/prototype equipment or test instrumentation and the integration of developmental and operational evaluations to support accelerated acquisition. Effort included costs for 60 civilian authorizations.</li> </ul> <p>Total 4161</p> <p><b>FY 1998 Planned Program:</b> The AMSAA Test Design and Evaluation (TD&amp;E) mission was transferred to the U.S. Army Operational Test and Evaluation Command (OPTEC) (Project M542) in the FY1998/1999 President's Budget Submission.</p> <p><b>FY 1999 Planned Program:</b> The AMSAA Test Design and Evaluation (TD&amp;E) mission was transferred to the Army Operational Test and Evaluation Command (OPTEC) (Project M542) in the FY1998/1999 President's Budget Submission. All evaluation funding in FY 1999 and outyears has been consolidated under the newly established PE 0605716A Army Evaluation Center under OPTEC.</p>											

Project D026

Page 3 of 9 Pages

Exhibit R-2 (PE 0605706A)

1178

Item 124

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
6 - Management and Support		0605706A Materiel Systems Analysis	D026
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	4169	0	0
Adjustments to Appropriated Value	4258		
FY 1999 President's Budget	-97	0	0
	4161		

Project D026

Page 4 of 9 Pages

Exhibit R-2 (PE 0605706A)

Item 124

1179

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
6 - Management and Support		0605706A Materiel Systems Analysis								M541			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
M541 Materiel Systems Analysis		9845	8715	9711	9736	11155	11481	11827	Continuing	Continuing	Continuing		

**A. Mission Description and Justification:** Project M541 funds the Army Materiel Systems Analysis Activity's (AMSAA) primary mission of materiel systems analysis. AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and existing systems to conduct and support systems analyses, such as: analysis of alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. AMSAA provides Army-wide support in the development of methodologies, models, simulations, and databases for use in its and other Army agencies' analyses. AMSAA supports the Army modeling and simulation (M&S) community by providing item level performance methodology/data and standardized algorithms that help ensure the credibility of Army M&S. AMSAA is the Army's designated source of item level performance data and, as such, develops, maintains, and provides a diverse range of data for its and other Army and DoD agencies' analyses. AMSAA is the Army's executive agent for its verification, validation, and accreditation program and for the Research, Development and Acquisition (RDA) domain as part of the Army's M&S Management Structure. AMSAA also develops reliability, availability, and maintainability methodologies for use in its and other Army agencies' analyses. This project funds the salaries of civilian employees assigned to the materiel system analysis mission.

#### FY 1997 Accomplishments:

- 472 Developed and certified system performance data for U.S. and foreign systems to be used to support Army and Joint AoAs, force structure studies and theater level studies. Examples of programs where decisions were influenced: Future Scout Cavalry Systems CPEA, Brilliant Anti-Tank (BAT) Pre-Planned Product Improvement (P3I), Joint Anti-Armor Requirements Review, and Firefinder P3I. Effort included costs for 7 civilian authorizations.
- 7215 Provided analyses of performance and combat effectiveness of materiel systems and tech base programs in support of HQDA, AMC, Program Executive Offices (PEOs)/Program Managers (PMs) and Research & Development (R&D) Centers. Included are performance analyses, analyses of alternatives, risk assessments, and reliability, availability, and maintainability assessments for HQDA and OPTEC in support of milestone acquisition decisions. Provided performance data and analytic support for Distributed Interactive Simulation (DIS) projects, and AWE supporting Force XXI. Examples of programs where decisions were influenced: Starstreak, BAT P3I, ATACMS BLK 1A, Longbow Hellfire, M829E3, and Future Combat System. Effort included costs for 101 civilian authorizations.
- 1248 Developed, modified, and maintained item level methodology used as tools to conduct systems analysis. Examples of such models were: Target Acquisition Model, Ground Wars System Model, Physics of Failure Model, GENESIS Model, ARTQWIK Model and SAMSITE Model. Developed methodologies to characterize the performance and combat effectiveness of new technologies in force-on-force analyses. Performed validation and accreditation of item level performance models and methodologies which were developed in-house. Effort included costs for 17 civilian authorizations.

Project M541

Page 5 of 9 Pages

Exhibit R-2 (PE 0605706A)

1180

Item 124

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605706A Materiel Systems Analysis</b>	<b>M541</b>	
<b>FY 1997 Accomplishments: (continued)</b>			
•	910 Evaluation Analysis Center (EAC) conducted evaluations of materiel systems in support of the Army Acquisition Executive. Included were performance analyses, reliability, availability, and maintainability assessments for HQDA in support of milestone acquisition decisions. Specific efforts included preparation of System Evaluation Plans (SEPs) for Army TACMS Block II/BAT (BAT-P3D), Firefinder II, Army Tactical Missile System Block 1A (ATACMS BLK 1A), Longbow, Hellfire, Starstreak, M829E3, and system evaluations or materiel releases for the Force XXI Starstreak, Sentinel, Stinger Block I, and Linebacker. Effort included costs for 8 civilian authorizations.		
Total	9845		
<b>FY 1998 Planned Program:</b>			
•	449 Develop and certify system performance data for U.S. and foreign systems to be used to support Army and Joint AoAs, force structure studies and theater level studies. Examples of programs where decisions will be influenced: Grizzly, Deep Battle Sensors, and Follow-On-To-TOW (FOTT). Effort includes costs for 6 civilian authorizations.		
•	7084 Analyze the performance and combat effectiveness of materiel systems and tech base programs in support of HQDA, AMC, PEOs/ PMs and R&D Centers. Included are conduct of and support to: cost and operational effectiveness analyses, analyses of alternatives, system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. Examples of programs where decisions will be influenced: Grizzly, Soldier as a System, ATACMS Extended Range Missile, MRLS Extended Range Missile, SADARM, XM982 and XM795 Missile. Effort includes costs for 98 civilian authorizations.		
•	1182 Develop, modify, and maintain item level methodology used as tools to conduct systems analysis. Examples of such models are: Crusader Performance Model, Virtual Proving Ground (VPG) Model, Close Combat Tactical Trainer (CCTT) Model, ACQUIRE-X Model, Cost As An Independent Variable Methodology. Develop methodologies to characterize the performance and combat effectiveness of new technologies in force-on-force analyses. Perform validation and accreditation of item level performance models and methodologies which will be developed in-house. Effort includes costs for 16 civilian authorizations.		
Total	8715		
<b>FY 1999 Planned Program:</b>			
•	530 Develop and certify system performance data for U.S. and foreign systems to be used to support Army and Joint AoAs, force structure studies and theater level studies. Examples of programs where decisions will be influenced: Crusader and Near Term Digital Radio (NTDR). Effort includes costs for 7 civilian authorizations.		
•	7907 Analyze the performance and combat effectiveness of materiel systems and tech base programs in support of HQDA, AMC, PEOs/ PMs and R&D Centers. Included are conduct of and support to: AoAs, system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. Examples of programs where decisions will be influenced: Crusader and NTDR. Effort includes costs for 102 civilian authorizations.		

Project M541

Page 6 of 9 Pages

Exhibit R-2 (PE 0605706A)

1181

Item 124

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605706A Materiel Systems Analysis</b>	<b>M541</b>																					
<p><b>FY 1999 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>1274 Develop, modify, and maintain item level methodology used as tools to conduct systems analysis. Examples of such models are WARSIM and VPG Model. Develop methodologies to characterize the performance and combat effectiveness of new technologies in force-on-force analyses. Perform validation and accreditation of item level performance models and methodologies which will be developed in-house. Effort includes costs for 16 civilian authorizations.</li> </ul> <p>Total 9711</p>																							
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>9957</td> <td>8993</td> <td>8664</td> </tr> <tr> <td>Appropriated Value</td> <td>10170</td> <td>8993</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-325</td> <td>-278</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>9845</td> <td>8715</td> <td>9711</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	9957	8993	8664	Appropriated Value	10170	8993		Adjustments to Appropriated Value	-325	-278		FY 1999 President's Budget	9845	8715	9711
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	9957	8993	8664																				
Appropriated Value	10170	8993																					
Adjustments to Appropriated Value	-325	-278																					
FY 1999 President's Budget	9845	8715	9711																				
<p>Change Summary Explanation: Funding: FY 1999 Funds (+1047) - Funding increase for additional C4I (Command, Control, Communications, Computers and Intelligence) and weapon performance analyses to support DA decision makers and PMs, broader application of Cost As an Independent Variable methodology and more comprehensive Horizontal Technology Integration and Science and Technology tradeoff analyses, and civilian pay raise adjustment.</p>																							
Project M541	Page 7 of 9 Pages	Exhibit R-2 (PE 0605706A)																					

Item 124

1182

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605706A Materiel Systems Analysis								M542	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M542 Major Systems Test, Design and Evaluation		0	19040	0	0	0	0	0	Continuing	Continuing	

**A. Mission Description and Justification.** This is not a new start. Funds were realigned from Project D026 and M541 in support of the Army consolidation of the materiel evaluation function under the U.S. Army Operational Test and Evaluation Command (OPTEC). Also reflects the realignment of the Operational Evaluation Command (OEC) previously funded in the Operations and Maintenance, Army (OMA) appropriation. Starting in FY 1999 this funding will be transferred to a newly established PE 0605716A Army Evaluation Center. This realignment will complete the consolidation of Army Evaluation. In FY 1998 Project M542 funds the OPTEC mission of evaluation and test design. OPTEC is the Army's technical and operational evaluator of developmental systems and tests for all Army acquisition programs. This mission is shared by the Evaluation Analysis Center (EAC) and OEC, both subordinate commands to OPTEC. OPTEC provides integrated technical and operational evaluations and continuous evaluation of assigned Major Defense Acquisition Programs (MDAPs), Major Automated Information Systems Review Council (MAISRC), and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. OPTEC develops the evaluation strategy, designs technical and operational tests, and evaluates the test results to address the effectiveness, suitability, and survivability factors pertinent to the decision process, such as: Critical Operational Issues and Criteria (COIC), system performance, soldier survivability, performance in countermeasures, survivability, reliability, supportability, etc. OPTEC has a lead role in the planning and execution of the Army live fire tests through its evaluation and test design responsibilities. This project funds the salaries of civilian employees assigned to the evaluation and test design missions. This project does not finance test facility operations, test instrumentation or test equipment.

**FY 1997 Accomplishments:** Project funded under Projects D026 and M541.

**FY 1998 Planned Program:**

- 18563 Prepare integrated System Evaluation Plans (SEPs) and conduct integrated technical and operational evaluations and continuous evaluations of all Army weapon systems. Provide test designs and evaluations for weapon systems throughout the entire research and development of a system or those undergoing major materiel change. System evaluations will support program milestone decision reviews during FY 98. Develop test design and evaluation plans for tests to be conducted in FY 99 through FY 03. These efforts include evaluation and test design planning for systems projected to undergo live fire testing in FY 99-00. Early planning and analysis assures early identification of requirements for long lead procurement of experimental/prototype equipment or test instrumentation and integration of developmental and operational evaluations to support accelerated acquisition and technology transition programs. Major efforts include: Army Tactical Missile System Block II (ATACMS Blk II), Bradley Fighting Vehicle System (BFVS), Extended Range - Multiple Launch Rocket System (ER-MLRS), Bradley Fire Support Team (BFIST), Command and Control Vehicle(C2V), Wide Area Munition (WAM) system, Army TACMS Block II/BAT (BAT-P31), Search and Destroy Armor (SADARM), Advanced Field Artillery Tactical Data System (AFATDS), All Source Analysis System (ASAS), Battlefield Combat Identification System (BCIS), Close Combat Tactical Trainer (CCTT), Crusader, Forward Area Air Defense (FAAD-C2I), Joint Stars, Joint Tactical Information Distribution System

Project M542

Page 8 of 9 Pages

Exhibit R-2 (PE 0605706A)

1183

Item 124

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605706A Materiel Systems Analysis</b>	<b>M542</b>																					
<p><b>FY 1998 Planned Program: (continued)</b>            (JTIDS), Comanche, Long Bow Apache, Suite of Integrated Infrared Countermeasures (SIIRCM), Secure, Mobile, Anti-jam, Reliable, Tactical Terminal (SMART-T), and Tactical Unmanned Aerial Vehicle - Tactical Computer System (UAV-TCS). Effort includes funding and spaces for 166 civilians transferred from the following: Project D026 - 60, Project M541 - 8, and OEC (OMA) - 98.</p> <ul style="list-style-type: none"> <li>• 477 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 19040</p>																							
<p><b>FY 1999 Planned Program:</b> Project Consolidated under PE 0605716A Army Evaluation Center under OPTEC.</p>																							
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>0</td> <td>20714</td> <td>20011</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>20714</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>-1674</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>19040</td> <td>0</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	0	20714	20011	Appropriated Value	0	20714		Adjustments to Appropriated Value	0	-1674		FY 1999 President's Budget	0	19040	0
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	0	20714	20011																				
Appropriated Value	0	20714																					
Adjustments to Appropriated Value	0	-1674																					
FY 1999 President's Budget	0	19040	0																				
<p>Change Summary Explanation: Funding: FY 1999 Funds (-20011) transferred to PE 0605716A Army Evaluation Center under OPTEC.</p>																							
Project M542		Exhibit R-2 (PE 0605706A)																					

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1185

Item 124

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
6 - Management and Support										
0605709A Exploitation of Foreign Items										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	6962	7523	4031	3918	3794	4119	4041	Continuing	Continuing	
D650 Exploitation of Foreign Items	3108	3239	0	0	0	0	0	0	6347	
DC28 Acquisition/Exploitation of Threat Items	3854	4284	4031	3918	3794	4119	4041	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This is a continuing project for acquisition and exploitation of foreign materiel to support force and materiel development, scientific and technical intelligence needs, operations and training. Primary program objectives are to reduce research and development times for U.S. systems by analyzing innovations and technology in foreign materiel, and to make research and development more efficient by reducing uncertainties concerning potential advanced technology threats to U.S. systems. The program also serves to develop counter measures and to support operational commanders with items for training the force. This program enables the Army to conserve research and development funds and man-hours, enhance and improve U.S. designs, and provide realistic testing and training. These projects fund foreign materiel acquisitions and exploitations in support of the U.S. Army testing, training and intelligence programs required for general research and development and, since they are not allocable to specific R&D missions, are appropriately funded in Budget Activity 6.

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE																											
BUDGET ACTIVITY		PROJECT																											
6 - Management and Support		February 1998																											
PE NUMBER AND TITLE		PROJECT																											
0605709A Exploitation of Foreign Items		D650																											
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
D650 Exploitation of Foreign Items	3108	3239	0	0	0	0	0	0	6347																				
<p><b>A. Mission Description and Justification:</b> Project D650 - Exploitation/Evaluation of Foreign Items: This project affords the Army's research and development (R&amp;D) community an opportunity to acquire and exploit/evaluate worldwide leading edge technologies. This exploitation/evaluation of foreign technological capabilities is required in order to prevent technological surprise, eliminate or compress the R&amp;D time cycle, contribute to R&amp;D cost avoidance, enhance U.S. system and program designs, and to explore non-developmental items.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1300 Continued on-going project evaluations and exploitations identified prior to FY 97.</li> <li>1100 New start FY 97 acquisitions of 23 projects.</li> <li>708 New start FY 97 evaluations and exploitations of foreign materiel and/or technologies.</li> </ul> <p>Total 3108</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1300 Continue on-going project evaluations and exploitations identified prior to FY 98.</li> <li>1100 Plan new start FY 98 acquisitions of 24 projects.</li> <li>761 Plan new start FY98 evaluations and exploitations of foreign materiel and /or technologies.</li> <li>78 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> </ul> <p>Total 3239</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 99.</p> <p><b>B. Project Change Summary</b></p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>3235</td> <td>3342</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>3304</td> <td>3342</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-196</td> <td>-103</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>3108</td> <td>3239</td> <td>0</td> </tr> </tbody> </table>											FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	3235	3342	0	Appropriated Value	3304	3342		Adjustments to Appropriated Value	-196	-103		FY 1999 President's Budget	3108	3239	0
	FY 1997	FY 1998	FY 1999																										
FY 1998/1999 President's Budget	3235	3342	0																										
Appropriated Value	3304	3342																											
Adjustments to Appropriated Value	-196	-103																											
FY 1999 President's Budget	3108	3239	0																										

Project D650

Page 2 of 4 Pages

Exhibit R-2 (PE 0605709A)

1187

Item 125

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605709A Exploitation of Foreign Items								DC28	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DC28	Acquisition/Exploitation of Threat Items	3854	4284	4031	3918	3794	4119	4041	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Project DC28 - Acquisition/Exploitation of Threat Items: This is a continuing project for acquisition and exploitation of foreign materiel constituting potential advanced technology threats to U.S. systems. The primary aim of this project is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties concerning these threats. The project also answers general scientific and technical intelligence requirements, aids in the development of countermeasures to threat materiel and threat technology, and provides materiel for realistic testing and training. Acquisitions and exploitations are executed according to an Army Foreign Materiel Review Board and with the approval of the Army Deputy Chief of Staff for Intelligence (DCSINT).</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>450 Acquired threat systems identified and prioritized in the FY 97 Army Foreign Materiel Program (FMP) Five Year Plan.</li> <li>2404 Initiated, continued or completed exploitation projects on ground systems of Army interest identified in the FY 97 Army FMP Exploitation Plan.</li> <li>1000 Initiated, continued or completed exploitation projects on missile systems of Army interest identified in the FY 97 Army FMP Exploitation Plan.</li> <li>Total 3854</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>600 Acquire threat systems identified and prioritized in the FY 98 Army Foreign Materiel Program (FMP) Five Year Plan.</li> <li>2577 Initiate, continue or complete exploitation projects on ground systems of Army interest identified in the FY 98 Army FMP Exploitation Plan.</li> <li>1000 Initiate, continue or complete exploitation projects on missile systems of Army interest identified in the FY 98 Army FMP Exploitation Plan.</li> <li>107 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> <li>Total 4284</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>900 Acquire threat systems identified and prioritized in the FY 99 Army Foreign Materiel Program (FMP) Five Year Plan.</li> <li>2131 Initiate, continue, or complete exploitation projects on ground systems of Army interest identified in the FY 99 Army FMP Exploitation Plan.</li> <li>1000 Initiate, continue, or complete exploitation projects on missile systems of Army interest identified in the FY 99 Army FMP Exploitation Plan.</li> <li>Total 4031</li> </ul>											

Project DC28

Page 3 of 4 Pages

Exhibit R-2 (PE 0605709A)

1188

Item 125

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

**PROJECT  
DC28**

## BUDGET ACTIVITY

## 6 - Management and Support

### **B. Project Change Summary**

### FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

## FY 1999 President's Budget

FY 1997

3958

4043

-189-

FY 1999

---

4349

•

Project DC28

Page 4 of 4 Pages

Exhibit R-2 (PE 0605709A)

1189

Item 125

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

## 0605712A Support of Operational Testing

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	44900	76807	66320	64156	57651	64956	66097	Continuing	Continuing
DV02 Test Directorates	14486	34912	41004	42613	36914	43961	44627	Continuing	Continuing
D001 OPTEC IOTE	15726	20608	20486	15803	14990	14887	15348	Continuing	Continuing
D985 Concepts Evaluation of Materiel	10498	16222	0	0	0	0	0	Continuing	Continuing
D987 OPTEC Instrumentation Sustainment & Development	4190	5065	4830	5740	5747	6108	6122	Continuing	Continuing

NOTE: Project D985 Concepts Evaluation of Materiel transfers to PE 0605326, Project D308 in FY1999.

**Mission Description and Budget Item Justification:** This program finances the operational testing of developmental materiel systems. Its efforts are directed toward the support of operations required for use in general research and development (R&D). **Project DV02** provides for the recurring costs of operating the test activities of the U.S. Army Operational Test and Evaluation Command (OPTEC). Increase starting in FY 1998 reflects restructure directed by OSD of manpower and funds for the Test and Evaluation Coordination Offices (TECO's), Operational Threat Support Activity (OTSA), Test and Evaluation Support Activity and test support funds previously programmed and budgeted in the Operations and Maintenance, Army (OMA) appropriation. The FY 1999 increase completes the transfer of manpower and funds for OTSA from the OMA appropriation. **Project D001** provides for direct operational and joint test costs incurred by OPTEC. Excludes funding for Acquisition Category I (ACAT I) major weapons systems which are programmed within the PE funding development for each system. Funding increase beginning in FY 1998 is necessary to execute ACAT II-IV, Automated Information Systems (AIS), and joint test workload scheduled for FY 1998-1999. **Project D985** enables U.S. Army Training and Doctrine Command (TRADOC) battle labs and schools to evaluate emerging technologies and other equipment to help define Army mission needs and operational requirements. Projects selected for funding are relatively low cost conceptual evaluations, with high potential for warfighting return on investment. Program provides direct support to battle lab minor Advanced Warfighter Experiments (AWEs). Program is also a first look at emerging technologies that have the potential to support the Army's Force XXI design needs. **Project D987** provides for development and acquisition of non-major and sustaining instrumentation necessary to attain and maintain the data collection and analysis capability to conduct credible and robust operational tests as demanded by the DoD and Congress. It provides for replacement and improvements of existing obsolete inventory and for the development of new technologies to keep abreast of new weapon advancements. The projects in PE 0605712A fund operational testing and concept evaluation of materiel in support of the Army and DoD general research and development. Since they are not allocable to specific R&D missions, they are appropriately funded in Budget Activity 6.

Page 1 of 16 Pages

Exhibit R-2 (PE 0605712A)

1190

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605712A Support of Operational Testing								DV02	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DV02 Test Directorates		14486	34912	41004	42613	36914	43961	44627	Continuing	Continuing	
<p><b>A. Mission Description and Justification: Project DV02 - Test Directorates:</b> This project finances recurring costs, including civilian pay, support contracts, temporary duty, supplies and equipment of subordinate elements of the Test and Experimentation Command (TEXCOM): Airborne and Special Operations Test Directorate, Fort Bragg, NC; Air Defense Test Directorate, Fort Bliss, TX; Fire Support Test Directorate, Fort Sill, OK; and the Intelligence and Electronic Warfare Test Directorate, Fort Huachuca, AZ and test directorates located at Fort Hood, TX (Aviation; Close Combat; Engineer/Combat Support; Command, Control, and Communications-Information Mission Area; Advanced Concepts). The primary mission of these test directorates is to conduct operational testing of developmental materiel and force development test and experimentation (FDTE). Increase starting in FY 1998 reflects transfer of manpower and funds directed by OSD for the Test and Evaluation Coordination Offices (TECO's), Operational Threat Support Activity (OTSA), Test and Evaluation Support Activity and test support from the OMA appropriation. Increase in FY 1999 completes the transfer of manpower and funds for OTSA from the OMA appropriation.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 3777 Operational costs including 72 civilian authorizations at Fort Hood, TX Test Directorate</li> <li>• 2444 Operational costs including 28 civilian authorizations at Fort Sill, OK Test Directorate</li> <li>• 3036 Operational costs including 35 civilian authorizations at Fort Huachuca, AZ Test Directorate</li> <li>• 2369 Operational costs including 40 civilian authorizations at Fort Bragg, NC Test Directorate</li> <li>• 2860 Operational costs including 38 civilian authorizations at Fort Bliss, TX Test Directorate</li> <li>Total 14486</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 16112 Operational costs including 175 civilian authorizations at Fort Hood, TX Test Directorate (includes Test and Evaluation Support Activity)</li> <li>• 2318 Operational costs including 28 civilian authorizations at Fort Sill, OK Test Directorate</li> <li>• 2995 Operational costs including 35 civilian authorizations at Fort Huachuca, AZ Test Directorate</li> <li>• 2387 Operational costs including 40 civilian authorizations at Fort Bragg, NC Test Directorate</li> <li>• 3017 Operational costs including 38 civilian authorizations at Fort Bliss, TX Test Directorate</li> <li>• 6073 Operational costs including 9 civilian authorizations at Operational Threat Support Activity, Fort Bliss, TX</li> <li>• 1443 Operational costs including 18 civilian authorizations at Test and Evaluation Coordination Offices</li> </ul>											

Project DV02

Page 2 of 16 Pages

Exhibit R-2 (PE 0605712A)

1191

Item 126

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605712A Support of Operational Testing

DV02

## FY1998 Planned Program: (continued)

- 567 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 34912

## FY 1999 Planned Program:

- 16890 Operational costs including 161 civilian authorizations at Fort Hood, TX Test Directorate (includes Test and Evaluation Support Activity)
- 2488 Operational costs including 28 civilian authorizations at Fort Sill, OK Test Directorate
- 3162 Operational costs including 34 civilian authorizations at Fort Huachuca, AZ Test Directorate
- 2453 Operational costs including 40 civilian authorizations at Fort Bragg, NC Test Directorate
- 3171 Operational costs including 37 civilian authorizations at Fort Bliss, TX Test Directorate
- 11283 Operational costs including 18 civilian authorizations at Operational Threat Support Activity, Fort Bliss, TX
- 1557 Operational costs including 18 civilian authorizations at Test and Evaluation Coordination Offices
- Total 41004

## B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	14631	37207	32453
Appropriated Value	14944	37207	
Adjustments to Appropriated Value	-458	-2295	
FY 1999 President's Budget	14486	34912	41004

## Change Summary Explanation:

Funding: FY 1999 increase (+8551) - Increase funding reflects the reprogramming of manpower and funds previously programmed and budgeted in the OMA appropriation for the Operational Threat Support Activity (+8,351) and civilian pay raise adjustment (+200).

Project DV02

Page 3 of 16 Pages

Exhibit R-2 (PE 0605712A)

1192

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
6 - Management and Support		0605712A Support of Operational Testing						February 1998	D001
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Total Cost
D001 OPTEC IOTE		15726	20608	20486	15803	14990	14887	15348	Continuing
<p><b>A. Mission Description and Justification: Project D001 - OPTEC IOTE:</b> This project finances the direct costs of planning and conducting operational testing on major and non-major materiel systems (ACAT II-IV), including Multi-Service systems (all ACATs) and Joint tests (JT). It funds those costs directly attributable to conducting an early user test and evaluation (EUTE), a limited user test (LUT), a technical test (TT), or an initial operational test and evaluation (IOTE) on major and non-major materiel systems. Test funding for ACAT I systems is programmed with the PE funding development of each system. Operational testing is conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness, suitability, and survivability of the system. Funding increase beginning in FY 1998 is necessary to execute ACAT II-IV, Automated Information Systems (AIS), and joint test workload scheduled for FY 1998-1999.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>85 SSP (IOTE) - Strategic Sealift Program</li> <li>7 IRV (IOTE) - Improved Recovery Vehicle</li> <li>144 EPLRS (IOTE) - Enhanced Position Location Reporting System</li> <li>186 TWS (IOTE) - Thermal Weapon Sight</li> <li>949 ISYSCON (IOTE) - Integrated System Control</li> <li>429 GBCS LIGHT IOT&amp;E (IOTE) - Ground Based Common Sensor Light</li> <li>4157 BIDS P3I (IOTE) - Biological Integrated Detection System Pre-Planned Product Improvement</li> <li>855 PKG 11 (IOTE) - AFATDS - Field Artillery Tactical Data System</li> <li>153 ITAS (IOTE) - Improved Target Acquisition System</li> <li>25 LW (IOTE) - Land Warrior</li> <li>42 SOFTACS / STAR-T (IOTE) - Special Operations Forces Tactical Assured Connectivity System/SHF Tri-Band</li> <li>128 RSCCE (IOTE) - Replacement Satellite Configuration Control Element</li> <li>335 UH-60Q (IOTE) - Utility Helicopter 60Q</li> <li>408 BFIST #2 (LUT) - Bradley Fire Support Team</li> <li>351 BFIST (XM7) #1 (LUT) - Bradley Fire Support Team (XM7)</li> <li>49 CCTT (TT) - Close Combat Tactical Trainer</li> <li>775 CCTT (IOTE) - Close Combat Tactical Trainer</li> </ul>									

Project D001

Page 4 of 16 Pages

Exhibit R-2 (PE 0605712A)

1193

Item 126

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
6 - Management and Support		0605712A Support of Operational Testing	D001
FY1997 Accomplishments: (continued)			
•	2059 CCTT (LUT) - Close Combat Tactical Trainer		
•	18 IFCS ESIT (LUT) - Improved Fire Control System Extended System Integration Test		
•	300 ARL-M (LUT) - Airborne Reconnaissance Low - Multifunction		
•	10 SSP II (IOTE) - Strategic Sealift Program		
•	42 SIRFC (IOTE) - Suite of Integrated Radio Frequency Countermeasures		
•	220 FBCB2 (IOTE) - Force Battle Command Brigade and Below		
•	307 TYQ-69, CCS (FMSS) (IOTE) - AN/TYQ-69 Communication Control Set		
•	12 ACPM XM45 (IOTE) - Aircrew Protective Mask		
•	1021 MICAD (IOTE) - Multipurpose Integrated Chemical Agent Alarm		
•	182 AIRTERM/KY-100 (IOTE) - Advanced Narrowband Digital Voice Terminal		
•	567 AKMS (IOTE) - Automated Key Management System		
•	21 ATNAVICS (IOTE) - Air Traffic Navigation, Integration and Coordination System		
•	7 CABS UH-60 (IOTE) - Cockpit Airbag System (UH-60)		
•	13 NBCRS (LUT) - Nuclear Biological and Chemical Reconnaissance System		
•	9 CBPS (IOTE) - Chemically and Biologically Protected Shelter		
•	4 MDS-PS-HPW (IOTE) - Modular Decontamination System		
•	11 JTT (IOTE) - Joint Tactical Terminal		
•	667 M270A1 (IOTE) - Multiple Launch Rocket System		
•	3 ER-MLRS (IOTE) - Extended Range-Multiple Launch Rocket System		
•	12 CK (IOTE) - Containerized Kitchen		
•	9 CP LR-BSDS (IOTE) - Counterproliferation Long Range Biological Standoff Detection System		
•	7 FF P31 (IOTE) - Firefinder AN/TPQ-37 (Block II) Pre-Planned Product Improvement		
•	531 ASTAMIDS/JT-UAV (IOTE) - Airborne Standoff Minefield Detection System, Joint Unmanned Air Vehicle		
•	26 ASTAMIDS/UAV (IOTE) - Airborne Standoff Minefield Detection System, Unmanned Air Vehicle		
•	2 BFIST (XM7) (IOTE) - Bradley Fire Support Team		
•	488 SEPS (IOTE) - SHORTSTOP Electronic Protection System		
•	100 ASV (DT/OT) - Armored Security Vehicle		
	Total	15726	

Project D001

Page 5 of 16 Pages

Exhibit R-2 (PE 0605712A)

Project D001

Page 5 of 16 Pages

Exhibit R-2 (PE 0605712A)

1194

Item 126

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management and Support</b>	<b>0605712A Support of Operational Testing</b>	<b>February 1998</b>	<b>D001</b>
<b>FY 1998 Planned Program:</b>			
• 500	ASCIET 97 Joint Test (JT) - All Services Combat Identification Evaluation Team		
• 23	TYQ-69, CCS (IOTE) - AN/TYQ-69 Communication Control Set		
• 304	AMPS (IOTE) - Aviation Mission Planning System		
• 3746	FBCB2 (LUT) - Force Battle Command Brigade and Below		
• 2621	LW (IOTE) - (Land Warrior)		
• 4647	SSP (IOTE) - Strategic Sealift Program		
• 2563	ISYSCON (IOTE) - Integrated System Control		
• 149	JWF (JT) - Joint Warfighter		
• 1870	JCSAR JT&E (JT) - Joint Combat Search and Rescue		
• 650	JSEAD LIVEX 98 (JT) - Joint Suppression of Enemy Air Defense		
• 20	JADS ETE PH II (JT) - Joint Advanced Disputed Simulation Phase II		
• 55	JECSIM (JT) - Joint Electronic Combat Test Using Simulation		
• 10	MACS (IOTE) - Modular Artillery Charge System		
• 2934	CCTT (IOTE) - Close Combat Tactical Trainer		
• 516	Small Business Innovative Research/Small Business Technology Transfer Programs		
Total			20608
<b>FY 1999 Planned Program:</b>			
• 2	AMPS (IOTE) - Aviation Mission Planning System		
• 40	FBCB2 (LUT) - Force Battle Command Brigade and Below		
• 5166	LW (IOTE) - Land Warrior		
• 10	SSP (IOTE) - Strategic Sealift Program		
• 10	JADS JT&E II (JT) - Joint Advanced Disputed Simulation Phase II		
• 13	ATNAVICS (DT/OT) - Air Traffic Navigation, Integration and Coordination System		
• 3	GLPS (DT/OT) - Gun Laying and Positioning System		
• 291	MACS Live Fire (IOTE) - Modular Artillery Charge System		
• 349	SIRFC (EUTE) - Suite Integrated Radio Frequency Countermeasures		
• 3084	SIRFC (DT/OT) - Suite Integrated Radio Frequency Countermeasures		
• 1053	AFATDS PKG 11 (IOTE) - Advanced Field Artillery Tactical Data System Package 11		

Project D001

Page 6 of 16 Pages

Exhibit R-2 (PE 0605712A)

1195

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
<b>6 - Management and Support</b>		<b>0605712A Support of Operational Testing</b>	<b>D001</b>
FY 1999 Planned Program (continued):			
•	1007 JTT (IOTE) - Joint Tactical Terminal		
•	932 HAB (IOTE) - Heavy Assault Bridge		
•	355 CSEL (IOTE) - Combat Survivor Evader Locator Excursion		
•	541 A2C2S (IOTE) - Army Airborne Command and Control System		
•	1400 JWF (JT) - Joint Warfighter		
•	980 JCSAR JT&E (RF 98-1) (JT) - Joint Combat Search and Rescue JT&E (Red Flag 98-1)		
•	160 JADS ETE PH IV (JT) - Joint Advanced Disputed Simulation Phase IV		
•	646 JSEAD LIVEX 98 (JT) - Joint Suppression of Enemy Air Defense		
•	150 JECSIM (JT) - Joint Electronic Combat Test Using Simulation		
•	20 JADS JT&E III (JT) - Joint Advanced Disputed Simulation Phase II		
•	4274 FBCB2 (IOTE) - Force Battle Command Brigade and Below		
	Total		20486
<b>B. Project Change Summary</b>			
	FY 1998/1999 President's Budget	FY 1997	FY 1998
	Appropriated Value	20355	22501
	Adjustments to Appropriated Value	21021	22501
	FY 1999 President's Budget	-5295	-1893
		15726	20608
			20743
			20486
Project D001		Exhibit R-2 (PE 0605712A)	
Page 7 of 16 Pages		Item 126	

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
6 - Management and Support		0605712A Support of Operational Testing								D985		
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D985	Concepts Evaluation of Materiel	10498	16222	0	0	0	0	0	Continuing	Continuing		
<p><b>A. Mission Description and Justification:</b> Project D985 - Concepts Evaluation of Materiel: The Concepts Experimentation Program (CEP) is a key innovative tool which provides TRADOC battle labs and schools the ability to capitalize on emerging technologies, emerging warfighting concepts, and new materiel initiatives. Program growth reflects increased emphasis on Force XXI initiatives and accelerated acquisition methods. Funds are used to acquire, lease or fabricate equipment to conduct experiments to determine military utility or potential to satisfy Army Doctrine, Training, Leader Development, Organization, Materiel and Soldiers (DTLOMS) needs. TRADOC battle labs build on initiatives with greatest potential payoff. Program is also used as a first look at emerging technologies and emerging warfighting concepts that have the potential to support the Army's Force XXI design needs. As the Army moves toward Force XXI, the critical task of designing the force around information requires major investment in information-age capabilities. Constructive, virtual, and live simulations are used to examine warfighting concepts across DTLOMS domains. They cover all aspects of command and control, lethality, survivability, and tempo and are essential to technology insertion in future Army systems and force structure. Beginning in FY1999 funding transferred to PE 065326, Project D308 Battle Lab Experimentation.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 115 MATTRACKS</li> <li>• 130 Encapsulating Foam for Cover and Assault Lane Breacher</li> <li>• 97 Skid Steer</li> <li>• 41 Light Assault Treadway Bridge</li> <li>• 70 Assault Breach Marking System</li> <li>• 5 Removable Ripper Tooth for the Combat Earthmover</li> <li>• 160 Seismic Detection in Military Operations</li> <li>• 60 Field Deployable Soil Probe for Military Prediction</li> <li>• 80 Modernized Cold Weather Road Construction Technology</li> <li>• 99 Ground Penetrating Radar-Soil Freeze or Surface Thaw</li> <li>• 50 Programmable Digital Radio (PDR) Aircraft Certification</li> <li>• 150 Programmable Digital Radio (PDR) Demonstration</li> <li>• 100 Simulations-Protect the Force/EADSIM</li> <li>• 78 Telepathy Battle Command</li> <li>• 100 Modular Causeway System (MCS) Sea State 3 Upgrade</li> </ul>												

Project D985

Page 8 of 16 Pages

Exhibit R-2 (PE 0605712A)

1197

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
6 - Management and Support		0605712A Support of Operational Testing	D985
FY 1997 Accomplishments: (continued)			
•	100 Multi-Variant Analysis Tool		
•	25 Rapid Runway Repair		
•	392 Battle Damage Assessment (BDA) Variant to BAT		
•	199 Deep Integrated Battlefield Architecture for ATACMS IB		
•	300 Common Launcher		
•	300 Beyond Visual Range Identification (BVRID)		
•	275 Automation and Simulation Technology in Classroom		
•	298 Light Digital TOC - Phase I		
•	150 Dismounted Soldier Power Initiative		
•	186 Dismounted Combat Identification Phase IV		
•	147 Multipurpose Mission Platform		
•	173 Counterdrug		
•	171 Dismounted Image Transmission		
•	237 Non-Lethal Technology		
•	165 Soldier Physiological Monitoring		
•	150 Lightweight Minefield and Obstacle Breacher		
•	235 Military Operations in Urban Terrain (MOUT)		
•	127 Countersniper		
•	65 Controlled Penetration Ammunition Study		
•	88 Network Management and Troubleshooting for Tactical Internet		
•	60 Multipurpose Sensor & Security Mission Platform		
•	49 Modular Crowd Control Munition		
•	45 Situational Awareness Technology in MOUT		
•	40 Vehicle Immobilization System		
•	38 Driver Viewer Enhancement/Battlefield Viewing System		
•	55 MARC-EPW Integration with Force XXI Appliqué		
•	126 MODSAF Logistics Concepts Simulation		
•	100 Detection Signature Application Technology (DSAT)		
•	62 Armored Treatment and Transport Vehicle		

Project D985

Page 9 of 16 Pages

Exhibit R-2 (PE 0605712A)

Project D985

Page 9 of 16 Pages

Exhibit R-2 (PE 0605712A)

1198

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605712A Support of Operational Testing	D985	
FY 1997 Accomplishments: (continued)			
•	132 Digital Diagnostics and Prognostics (DDAP)		
•	10 Lifetime Oil Filter		
•	200 HEMITT Load Handling System (LHS) Employment		
•	73 Disease Vectors		
•	74 Personal Protection for Force XXI-a Force Multiplier		
•	70 Forward Repair System-Heavy (FRS-H)		
•	295 PLS-E Integrated TWV Movement Tracking		
•	150 Artificial Intelligence Communications Maintenance System		
•	471 Combat Synthetic Test and Training Assessment Range		
•	220 Division/Brigade Trainer - Surrogate Common Ground Station		
•	288 Interactive Large Screen Display Prototype Testing		
•	298 Active Dialogue on the Move: Applications		
•	20 Laser Radar Targeting Systems (LATARS)		
•	139 All Radiation Anti-Missile System (ARAMS)		
•	97 Dynamic Reconnaissance and Surveillance		
•	200 Dynamic Intelligence Preparation		
•	207 Voice Digitization		
•	202 Light Explosive Ordnance		
•	235 Raptor Robotics		
•	45 Handheld Mine Detector		
•	175 AN/TPQ-36		
•	30 Buddystart De-Ice Kit		
•	45 Change Couple Device		
•	35 Telemedicine		
•	644 Division XXI AWE Support. Development and evaluation of digital training products. Simulation, experimentation and analytical support.		
•	450 Army Experiment IV (AE4)		
Total	10498		

Project D985

Page 10 of 16 Pages

Exhibit R-2 (PE 0605712A)

Project D985

Page 10 of 16 Pages

Exhibit R-2 (PE 0605712A)

Item 126

1199

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605712A Support of Operational Testing	D985	
FY 1998 Planned Program:			
•	150 Voice-Data Repeater		
•	8 Digital Aircraft Weighing Scale		
•	248 Manned and Unmanned Aerial Platform Operations on the Digital Battlefield		
•	57 Aviation Ground Recovery System		
•	77 Tele-Operation of the M1 Panther		
•	60 Mobile Hornet		
•	178 Teleops – D7G for Obstacle Clearing		
•	51 Engineer C4I		
•	110 Range Estimation with Seismic Sensors for Early Detection		
•	194 Smart Bridge		
•	254 Nonlethal Alternatives for Anti-personnel Landmines		
•	306 Operational Concept & Demo of the C2 Tactical Trainer (C2TT)		
•	295 Crusader Operations on the Digitized Battlefield		
•	148 Training FS Skills with Infoscope Tech vs. GUARD FIST		
•	198 Enhanced Fire Support Simulations		
•	123 SOF Digital Fire Support Connectivity		
•	83 Voice Recognition Technology for AFATDS		
•	90 3 Dimensional Night Vision Goggles (3D NVG)		
•	192 Data Display Integration Technology Evaluation		
•	136 Dismounted Combat Identification Phase V		
•	74 Small, Hands Free, Squad Radio for Restricted or Urban Terrain		
•	310 Signal Support for Force XXI TOC		
•	213 Warfighter Information Network Support for the CSS C4I		
•	140 Battlefield Video Teleconferencing (BVTC)		
•	95 Information Protection (Intrusion/Detection)		
•	270 Next Generation Semi-Autonomous Recon Operations in the Digital Battlefield		
•	294 Multi-Agent Fire Control System		
•	140 Mounted Warrior Capability Assessment		
•	85 Future Scout and Cavalry System Sensor Suite Configuration		

Project D985

Page 11 of 16 Pages

Exhibit R-2 (PE 0605712A)

Project D985

Page 11 of 16 Pages

Exhibit R-2 (PE 0605712A)

1200

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605712A Support of Operational Testing</b>	<b>D985</b>	
<p><b>FY 1998 Planned Program (continued):</b></p> <ul style="list-style-type: none"> <li>• 88 Pen Based Law Enforcement Systems (PBLES)</li> <li>• 85 Dynamically Distributed Overlays (DDO)</li> <li>• 300 Joint Collaborative Target System (JCTS)</li> <li>• 80 Automated Intelligence Preparation of the Battlefield / Automated DS</li> <li>• 105 USMC C31 Interoperability</li> <li>• 205 Automated Commander's Critical Information Requirements (AUTO CCIR)</li> <li>• 300 Small Lightweight Intercept Device (SLID)</li> <li>• 100 All Radiation Anti-Missile System</li> <li>• 300 SWORD Radar</li> <li>• 291 Course of Action War Gaming Tool</li> <li>• 233 Prototype ABCS Simulation Interface Support</li> <li>• 240 Tactical Class I Automation</li> <li>• 535 ICS3 Maintenance Model Embedded Training</li> <li>• 200 Forward Repair System - Heavy</li> <li>• 240 Movement Tracking System + Radio Frequency ID + ICS3 (MRI-E)</li> <li>• 240 Wartime Usage of C/E Rechargeable Batteries</li> <li>• 170 Deployment Information Support System (DISS)</li> <li>• 136 Vehicle Integrated Mobile Electrical Power Source</li> <li>• 200 ASL Mobility</li> <li>• 515 Battle Lab Experimentation</li> <li>• 6673 Continue Division XXI AWE Support. Experimentation to examine Division level digital connectivity to validate digital training products. Simulation and analysis to validate DTLOMS insights that will fuel Army investments in FY 99-FY 06.</li> <li>• 407 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 16222</li> </ul> <p><b>FY 1999 Planned Program:</b> Funding transferred to newly established PE 0605326, Project D308.</p>			

Project D985

Page 12 of 16 Pages

Exhibit R-2 (PE 0605712A)

1201

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT																				
<b>6 - Management and Support</b>		<b>0605712A Support of Operational Testing</b>	<b>D985</b>																				
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>10324</td> <td>16739</td> <td>10541</td> </tr> <tr> <td>Appropriated Value</td> <td>10545</td> <td>16739</td> <td></td> </tr> <tr> <td>Adjustments to appropriated Value</td> <td>-47</td> <td>-517</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>10498</td> <td>16222</td> <td>0</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY1999 Funds: Funding transferred to newly established PE 0605326, Project D308 Battle Lab Experimentation.</p>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	10324	16739	10541	Appropriated Value	10545	16739		Adjustments to appropriated Value	-47	-517		FY 1999 President's Budget	10498	16222	0
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	10324	16739	10541																				
Appropriated Value	10545	16739																					
Adjustments to appropriated Value	-47	-517																					
FY 1999 President's Budget	10498	16222	0																				

Project D985

Page 13 of 16 Pages

Exhibit R-2 (PE 0605712A)

Item 126

1202

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE					PROJECT			
6 - Management and Support		0605712A Support of Operational Testing					D987			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D987	OPTEC Instrumentation Sustainment & Development	4190	5065	4830	5740	5747	6108	6122	Continuing	Continuing

**A. Mission Description and Justification: Project D987 - OPTEC Instrumentation Sustainment & Development:** This project provides for the technical upgrade and maintainability of essential instrumentation to achieve cost effective data collection, telemetry, and processing capability for support of robust and credible operational tests as required by the DoD and Congress. Increased sophistication of new weapon and communication and control systems demand the need to capture test data at greater rates and increased volumes and then to reduce the information rapidly to only those essential to effectively evaluate the test. As digitization of the battlefield continues, this effort allows OPTEC to modernize and develop its non-major instrumentation allowing it to be less intrusive, more reliable and more robust in terms of integrating combat simulation capability into operational tests. The goal is to expand measurement and test control capability while still reducing future test costs. The Mobile Automated Instrumentation Suite (MAIS) will serve as a platform for integrating new instrumentation capability in support of Real-Time Casualty Assessment (RTCA) which measures simulated attrition of forces during simulated battlefield engagements. This project supports multiple efforts associated with MAIS and separate, independent initiatives that lead to improved command and control, increased mobility, and expanded remote data collection at various tactical sites with transmit capability to central receiving, control, and evaluation stations at various test directorates. These directorates are located at Fort Hood, TX; Fort Bliss, TX; Fort Huachuca, AZ; Fort Sill, OK; and Fort Bragg, NC.

**FY 1997 Accomplishments:**

- 103 Video Telemetry and Recording System (VTRS) (Technical Insertion - Performance Increase)
- 400 Multimedia Data Transfer (Technical Insertion - Performance Increase)
- 700 Mobile Automated Instrumentation Suite / Field Data Collector Interface (Technical Insertion - Performance Increase)
- 200 Fiberoptic Range Network (Technical Insertion - Performance Increase)
- 369 Mobile TEXCOM Experimentation Center /Mobile Automated Instrumentation Suite Merger (Technical Insertion - Performance Increase)
- 330 Automated Intelligence / Electronic Warfare Test System First Generation Upgrade (Technical Insertion - Performance Increase)
- 7 Hi-Speed Telemetry System (Quick Reaction in Support of Critical Operational Test)
- 111 Data Collection Vehicles (Quick Reaction in Support of Critical Operational Test)
- 193 Telemetry System Upgrade (Product Improvement)
- 84 Simulation Testing Operations Rehearsal Model (Technical Insertion - Performance Increase)
- 134 Improved Field Data Collector Test (Quick Reaction in Support of Critical Operational Test)
- 325 Data Management Environment Modem (Technical Insertion - Performance Increase)
- 350 Mobile Automated Instrumentation Suite Land Warrior Dismounted Troop (Technical Insertion - Performance Increase)
- 21 Traveling Wave Tube Amplifier Repair (Product Improvement)

Project D987

Page 14 of 16 Pages

Exhibit R-2 (PE 0605712A)

1203

Item 126

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	D987
<b>6 - Management and Support</b>	<b>0605712A Support of Operational Testing</b>		
<b>FY 1997 Accomplishments: (continued)</b>			
•	851 Surface-to-Air (SA)-15 (Technical Insertion - Performance Increase)		
•	12 Diagnostic/Simulation System (Quick Reaction in Support of Critical Operational Test)		
Total	4190		
<b>FY 1998 Planned Program:</b>			
•	276 Video Telemetry and Recording System (Technical Insertion - Performance Increase)		
•	400 Multimedia Data Transfer System (Technical Insertion - Performance Increase)		
•	835 Automated Intelligence / Electronic Warfare Test System First Generation Upgrade (Technical Insertion - Performance Increase)		
•	176 High-Speed Telemetry System (Quick Reaction in Support of Critical Operational Test)		
•	300 Radio Frequency Monitoring System (Technical Insertion - Performance Increase)		
•	765 Telemetry System Upgrade (Product Improvement)		
•	150 Command Audio / Visual Upgrade (Product Improvement)		
•	350 Laser System Upgrade (Product Improvement)		
•	500 Image System Upgrade (Product Improvement)		
•	325 Mobile TEXCOM Experimentation Center Mobile Automated Instrumentation Suite Merger (Technical Insertion - Performance Increase)		
•	198 Test View and Visualization (Technical Insertion - Performance Increase)		
•	350 Improved Field Data Collector Enhancements (Product Improvement)		
•	100 Improved Field Data Collector / Advanced Field Artillery Tactical Data System Interface (Quick Reaction in Support of Critical Operational Test)		
•	100 Carbon Dioxide Laser (Technical Insertion - Performance Increase)		
•	113 Bus Upgrade (Product Improvement)		
•	127 Small Business Innovative Research/Small Business Technology Transfer Programs		
Total	5065		
<b>FY 1999 Planned Program:</b>			
•	250 Multimedia Data Transfer System (Technical Insertion - Performance Increase)		
•	171 Airborne Position Location System (Technical Insertion - Performance Increase)		
•	100 Automated Intelligence / Electronic Warfare Test System (Product Improvement)		
•	260 Fiber Optics Range Net (Technical Insertion - Performance Increase)		
•	150 Radio Frequency Monitoring System (Technical Insertion - Performance Increase)		
•	1250 Improved Field Data Collector Enhancements (Product Improvement)		
Project D987	Page 15 of 16 Pages	Exhibit R-2 (PE 0605712A)	Item 126

1204

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE		
6 - Management and Support			0605712A Support of Operational Testing		
FY 1999 Planned Program: (continued)					
•	325	Vehicle Performance Measuring System (Technical Insertion – Performance Increase)			
•	500	Image Documentation System (Technical Insertion – Performance Increase)			
•	350	Command Audio/Visual Upgrade (Product Improvement)			
•	80	Mobile Automated Instrumentation Suite Stand Alone Work Station (Technical Insertion – Performance Increase)			
•	588	Carbon Dioxide Laser (Technical Insertion – Performance Increase)			
•	101	Electro-Optics Facility (Technical Insertion – Performance Increase)			
•	125	High Speed Video (Technical Insertion – Performance Increase)			
•	250	Airdrop Inclinator (Product Improvement)			
•	330	Video Telemetry System Modifications (Product Improvement)			
	Total				
B. Project Change Summary					
FY 1998/1999 President's Budget			FY 1997	FY 1998	FY 1999
Appropriated Value			4304	5225	5212
Adjustments to Appropriated Value			4396	5225	
FY 1999 President's Budget			-206	-160	
			4190	5065	4830

Project D987

Page 16 of 16 Pages

Exhibit B-2 (PE 0605712A)

Project D987

Page 16 of 16 Pages

Exhibit R-2 (PE 0605712A)

Item 126

1205

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
<b>6 - Management and Support</b>		<b>0605716A Army Evaluation Center</b>								<b>D302</b>	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D302	Army Evaluation Center	0	0	25526	23992	25745	26303	26877	Continuing	Continuing	

**A. Mission Description and Budget Item Justification** This is not a new start. Funds were realigned from PE 0605601A Project D699, PE 0605604A Project D734, and PE 0605706A, Project M542 in support of the Army consolidation of the materiel evaluation function under the U.S. Army Operational Test and Evaluation Command (OPTEC). Also reflects the realignment of the OPTEC Operational Evaluation Command (OEC) previously funded in the Operations and Maintenance, Army (OMA) appropriation. These realignments complete the consolidation of Army Evaluation. Project D302 funds the Army Evaluation Command (AEC) mission of evaluation and test design. AEC is the Army's technical and operational evaluator of developmental systems and tests for all Army acquisition programs. AEC provides integrated technical and operational evaluations and continuous evaluation of assigned Major Defense Acquisition Programs (MDAP), Major Automated Information Systems Review Council (MAISRC), and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. AEC develops the evaluation strategy, designs technical and operational tests, and evaluates the test results to address the effectiveness, suitability, and survivability factors pertinent to the decision process, such as: Critical Operational Issues & Criteria (COIC), system performance, soldier survivability, performance in countermeasures, system survivability, reliability, supportability, etc. AEC has a lead role in the planning and execution of the Army live fire tests through its evaluation and test design responsibilities. This project funds the salaries of civilian employees assigned to the evaluation and test design missions. This project does not finance test facility operations, test instrumentation or test equipment.

**FY 1997 Accomplishments:** Funded in PE 0605601A Project D630, PE 0605604A (funded by SLAD under various projects), PE 0605706A Projects D026 and M541, and PE 0121015 (OMA).

**FY 1998 Planned Program:** Funded in PE 0605601A Project D699, PE 0605604A Project D734, and PE 0605706A Project M542.

**FY 1999 Planned Program:**

- 25526 Provide integrated technical and operational evaluations and continuous evaluation of assigned Major Defense Acquisition Programs (MDAPs), Major Automated Information Systems Review Council (MAISRC), and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. Develop the evaluation strategy, design technical and operational tests and evaluate the test results to address the Effectiveness, Suitability, and Survivability factors pertinent to the decision process such as: Critical Operational Issues and Criteria (COIC), system performance, soldier survivability, performance in countermeasures, system survivability, reliability, availability, maintainability, supportability, etc. As the Army lead for Live Fire Test and Evaluation, plan and execute the Army Live Fire Test and Evaluation program for required developmental systems. Prepare integrated System Evaluation Plans and conduct integrated technical and operational evaluations for all Army weapon systems. Major efforts include: Forward Area Air Defense (FAAD-C21), Suite of Integrated Infrared

Project D302

Page 1 of 2 Pages

Exhibit R-2 (PE 0605716A)

1206

Item 127

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605716A Army Evaluation Center</b>	<b>D302</b>																					
<p><b>FY 1999 Planned Program: (continued)</b></p> <p>Countermeasures (SIIRCM), Advanced Field Artillery Tactical Data System (AFATDS), Crusader, Army TACMS Block II/BAT (BAT-P3I), Land Warrior, Heavy Assault Bridge (HAB), All Source Analysis System (ASAS), Battlefield Combat Identification System (BCIS), Bradley Fighting Vehicle System (BFVS-A3), Command and Control Vehicle (C2V), Extended Range - Multiple Launch Rocket System (ER-MLRS), M1A2 Abrams System Enhancement Program (M1A2-SEP), MH-47E Aircraft, Comanche, Tactical Unmanned Aerial Vehicle (TUAUV), Force Battle Command Brigade and Below (FBCB2), Warfighters' Simulation 2000 (WARSIM 2000), Joint Stars Command Ground Station (JSTARS CGS) and Suite of Integrated Radio Frequency Countermeasures (SIRFC). Effort includes costs for 171 civilian authorizations.</p>																							
Total	25526																						
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY1998/1999 President's Budget</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY1999 President's Budget</td> <td>0</td> <td>0</td> <td>25526</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY1998/1999 President's Budget	0	0	0	Appropriated Value	0	0		Adjustments to Appropriated Value				FY1999 President's Budget	0	0	25526
	FY 1997	FY 1998	FY 1999																				
FY1998/1999 President's Budget	0	0	0																				
Appropriated Value	0	0																					
Adjustments to Appropriated Value																							
FY1999 President's Budget	0	0	25526																				
<p><b>Change Summary Explanation:</b></p> <p>Funding: FY1999 Funds (+25526) - Increase of 23157 reflects the realignment from PE 0605601A Project D699 Non-Major Systems Test Design and Evaluation (1966), PE 0605604A Project D734 Survivability Evaluation (1180), and PE 0605706A Project M542 Major Systems Test, Design and Evaluation (2001) into this newly established PE. These realignments complete the consolidation of Army Evaluation under OPTEC. Increase of 2369 reflects AEC's involvement early on during system development, enabling early feedback to materiel developers and reducing overall acquisition costs and timelines caused by problems discovered after significant costs have been sunk into system design.</p>																							
Project D302		Exhibit R-2 (PE 0605716A)																					

Project D302

Page 2 of 2 Pages

Exhibit R-2 (PE 0605716A)

1207

Item 127

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605801A Programwide Activities									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		58310	79626	64588	69868	69318	75073	75514	Continuing	Continuing	
M881 RDTE Command/Center/General		56160	55160	51331	48278	49718	53133	54778	Continuing	Continuing	
MM75 Federal Workforce Restructure		2150	24466	12093	20444	18489	20848	19684	Continuing	Continuing	
MM76 Armament Group Support		0	0	1164	1146	1111	1092	1052	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This program funds the continued operation of non-Army Management Headquarters Activities (AMHA) management and administrative functions at U.S. Army Research, Development and Standardization Groups overseas, Army Research, Development, Test, and Evaluation (RDTE) commands, centers and activities required to accomplish overall assigned general research and development missions and international research and development not directly related to specific research and development projects. Project M881 reflects a glide path in response to Army infrastructure drawdown initiatives. The Standardization Groups play an integral role in the U.S. Army efforts for international cooperative research & development and interoperability and fulfill international memorandum of understanding requirements (especially the American, British, Canadian and Australia mission). Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605801A Programwide Activities								M881	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M881	RDT&E Command/Center/General	56160	55160	51331	48278	49718	53133	54778	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Project M881 RDT&amp;E Command/Center/General Administrative Support: Supports the non-AMHA management and administrative functions at the following Army RDT&amp;E commands, centers and activities: U.S. Army Research Institute for the Behavioral and Social Sciences, Alexandria, VA; U.S. Army Armament Research, Development and Engineering (RDE) Center, Picatinny Arsenal, NJ; U.S. Army Research Laboratory, Adelphi, MD; U.S. Army Aviation and Missile RDE Center, Redstone Arsenal, AL; U.S. Army Tank-Automotive RDE Center, Warren, MI; U.S. Army Chemical Biological Defense Command, Aberdeen Proving Ground, MD; U.S. Army Communications-Electronics Command RDE Center, Ft. Monmouth, NJ; U.S. Army Test and Evaluation Command, Aberdeen Proving Ground, MD; and provides funding for salaries, administrative support other than that provided by Department of State agreements to include rent, utilities, guards, and travel for five international RDT&amp;E Standardization Groups located in Australia, Canada, France, Germany, and United Kingdom. This project also provides continued operations of contracting and acquisition management and related administrative functions performed by the Army Medical Research Acquisition Activity (USAMRAA) in support of the Army Medical Research and Materiel Command (USAMRMC) RDT&amp;E programs and its tenant organizations at Ft. Detrick, MD, including medical materiel procurement contracts for the U.S. Army Medical Materiel Agency and the Office of the Surgeon General, Army. The project also provides funding for the headquarters activities at the USAMRMC, Ft. Detrick, Maryland to (1) develop medical RDT&amp;E program policy and guidance; (2) perform long range planning, programming and budgeting; (3) provide the management of resources; and (4) conduct program performance review and evaluation for the RDT&amp;E appropriation.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>45136 Provided continued operation of management and administrative functions at a level consistent with mission requirements and support needs at Army non-AMHA RDT&amp;E commands, centers and activities.</li> <li>3895 Continued operation of five Standardization Groups in support of international R&amp;D and rationalization, standardization and interoperability missions. Funded salaries, travel and contracts for non-Department of State administrative support.</li> <li>7129 Continued to provide acquisition management functions in support of USAMRMC RDT&amp;E programs and its tenant organizations, Ft. Detrick, MD, including medical materiel procurement contracts, and procurement of biological defense vaccines. Funds the operation of the USAMRMC HQ activities which administers the medical research, development, and acquisition program to sustain military technology superiority.</li> </ul> <p>Total 56160</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>44036 Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at Army non-AMHA RDT&amp;E commands, centers and activities.</li> <li>3763 Continue operation of five Standardization Groups in support of international R&amp;D and rationalization, standardization and interoperability missions. Funds salaries, travel and contracts for non-Department of State administrative support.</li> </ul>											

Project M881

Page 2 of 5 Pages

Exhibit R-2 (PE 0605801A)

1209

Item 128

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605801A Programwide Activities</b>	<b>M881</b>	
<b>FY 1998 Planned Program: (continued)</b>			
• 7197	Continue to provide acquisition management functions in support of USAMRMC RDT&E programs and its tenant organizations, Ft. Detrick, MD, including medical materiel procurement contracts, and procurement of biological defense vaccines. Fund the operation of the USAMRMC HQ activities which administers the medical research, development, and acquisition program to sustain military technology superiority.		
• 164	Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs.		
Total	55160		
<b>FY 1999 Planned Program:</b>			
• 40249	Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at Army non-AMHA RDTE commands, centers and activities.		
• 3682	Continue operation of five Standardization Groups in support of international R&D and rationalization, standardization and interoperability missions. Funds pay of people, travel and contracts for non-Department of State administrative support.		
• 7400	Continue to provide acquisition management functions in support of USAMRMC RDT&E programs and its tenant organizations, Ft. Detrick, MD, including medical materiel procurement contracts, and procurement of biological defense vaccines. Fund the operation of the USAMRMC HQ activities which administers the medical research, development, and acquisition program to sustain military technology superiority.		
Total	51331		
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	56980	56964	55896
Adjustments to Appropriated Value	58305	56964	
FY 1999 President's Budget	-2057	-1804	
	56160	55160	51331

Project M881

Page 3 of 5 Pages

Exhibit R-2 (PE 0605801A)

1210

Item 128

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																			
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																				
6 - Management and Support		0605801A Programwide Activities								MM75																				
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
MM75	Federal Workforce Restructure	2150	24466	12093	20444	18489	20848	19684	Continuing	Continuing																				
<p><b>A. Mission Description and Justification:</b> Project MM75 Federal Workforce Restructure. Requirements were defined by the Federal Workforce Restructuring Act of 1994. Funds are to be used to offset the expenses of Voluntary Early Retirement Authority/Voluntary Separation Incentive Pay (VERA/VSIP), the \$80 per capita tax to be remitted to the Treasury (Civil Service Retirement and Disability Fund) for on-board personnel as of 31 March and the 9% tax on the final basic pay of each employee who retired under VERA/VSIP to be remitted to the Civil Service Retirement and Disability Fund (CSRDF). Distribution will be made in the year of execution.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2150 Funded the 9% CSRDF tax for VSIP and \$80 per capita tax for on-board personnel.</li> </ul> <p>Total 2150</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 24466 Funds the transition costs associated with workforce reductions (VERA/VSIP, lump sum leave) and required OPM taxes.</li> </ul> <p>Total 24466</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 12093 Funds the transition costs associated with workforce reductions (VERA/VSIP, lump sum leave) and required OPM taxes.</li> </ul> <p>Total 12093</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>2787</td> <td>29244</td> <td>29708</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>2787</td> <td>25244</td> <td></td> </tr> <tr> <td>FY1999 President's Budget</td> <td>-772</td> <td>-778</td> <td></td> </tr> <tr> <td></td> <td>2150</td> <td>24466</td> <td>12093</td> </tr> </table> <p>Change Summary Explanation:</p> <p>Funding: FY1998 funds (-4000) is a Congressional reduction. FY1999 decrease (-17615) funds reprogrammed for higher priority requirements.</p>											FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	2787	29244	29708	Adjustments to Appropriated Value	2787	25244		FY1999 President's Budget	-772	-778			2150	24466	12093
FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	2787	29244	29708																											
Adjustments to Appropriated Value	2787	25244																												
FY1999 President's Budget	-772	-778																												
	2150	24466	12093																											

Project MM75

Page 4 of 5 Pages

Exhibit R-2 (PE 0605801A)

1211

Item 128

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998												
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT													
6 - Management and Support		0605801A Programwide Activities								MM76													
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost													
MM76	Armament Group Support	0	0	1164	1146	1111	1092	1052	Continuing	Continuing													
<p><b>A. Mission Description and Budget Item Justification:</b> This is not a new start. The goal of this program is to expand worldwide allied standardization and interoperability through cooperative research and development (R&amp;D) and technology sharing. This program partially funds the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate in international fora, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), and to pursue new cooperative R&amp;D initiatives and international cooperative agreements such as memoranda of understanding. This program also includes: the United States' share of costs of the NATO Civil Budget, Chapter IX, which funds the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning; partially funds the Four Power Senior National Representatives Army (SNR (A)), the American, British, Canadian, Australian (ABCA) Standardization Program, the Technical Cooperative Program, bilateral staff talks, and Army armaments working groups with many nations. This project supports general research and development activities and since it is not allocable to specific R&amp;D missions is appropriately funded in Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b> Program was funded in PE 0605802A, Project M798.</p> <p><b>FY 1998 Planned Program:</b> Project was not funded in FY1998.</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>414 Fund domestic and international travel linked to scientific and technological exchanges having military application and mutual benefits to the United States and its Allies.</li> <li>750 Fund the United States' share of the NATO Civil Budget, Chapter IX (Defense Support Programs).</li> </ul> <p>Total 1164</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>0</td> <td>0</td> <td>1164</td> </tr> </table> <p>Appropriated Value</p> <p>Adjustments to Appropriated Value</p> <p>FY 1999 President's Budget</p> <p>Change Summary Explanation: Funding: FY 1999 funds (+1164) realigned from other projects to PE0605801A, Project M76.</p>												FY 1997	FY 1998	FY 1999	0	0	0	0	0	0	0	0	1164
FY 1997	FY 1998	FY 1999																					
0	0	0																					
0	0	0																					
0	0	1164																					

Project MM76

Page 5 of 5 Pages

Exhibit R-2 (PE 0605801A)

1212

Item 128

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1213

Item 128

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998																			
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605802A International Cooperative Research and Development								M798																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
M798	International Cooperative Research and Development-Army Research Institute	1494	0	0	0	0	0	0	Continuing	Continuing																					
<p><b>A. Mission Description and Budget Item Justification:</b> The goal of this program is to expand worldwide allied standardization and interoperability through cooperative research and development (R&amp;D) and technology sharing. This program partially funds the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate in international fora, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAAG), and to pursue new cooperative R&amp;D initiatives and international cooperative agreements such as memoranda of understanding. This program also includes: the United States' share of costs of the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning; partially funds the Four Power Senior National Representatives Army (SNR (A)), the American, British, Canadian, Australian (ABCA) Standardization Program, the Technical Cooperative Program, bilateral staff talks, and Army armaments working groups with many nations. This project supports general research and development activities and since it is not allocable to specific R&amp;D missions is appropriately funded in Budget Activity 6.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>644 Funded domestic and international travel linked to scientific and technological exchanges having military application and mutual benefits to the United States and its Allies.</li> <li>850 Funded the United States' share of the NIAG and Special Fund for cooperative planning budget.</li> </ul> <p>Total 1494</p> <p><b>FY 1998 Planned Program:</b> Program not funded in FY 1998.</p> <p><b>FY 1999 Planned Program:</b> Program funded in PE 0605801A, Project M76.</p> <p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>1534</td> <td>1581</td> <td>1581</td> </tr> <tr> <td>Appropriated Value</td> <td>1566</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-72</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>1494</td> <td>0</td> <td>0</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 99 reduction of (-1581) realigned to newly established Project M76, in PE 0605801A.</p>													FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	1534	1581	1581	Appropriated Value	1566	0	0	Adjustments to Appropriated Value	-72			FY 1999 President's Budget	1494	0	0
	FY 1997	FY 1998	FY 1999																												
FY 1998/1999 President's Budget	1534	1581	1581																												
Appropriated Value	1566	0	0																												
Adjustments to Appropriated Value	-72																														
FY 1999 President's Budget	1494	0	0																												

Project M798

Page 1 of 1 Pages

Exhibit R-2 (PE 0605802A)

1214

Item 129

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1215

Item 129

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
6 - Management and Support										
0605803A Technical Information Activities										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	16465	14673	16251	16189	16634	16734	16979	Continuing	Continuing	
DC16 Field Assistance in Science and Technology	2477	2694	2734	2793	2848	2923	2999	Continuing	Continuing	
DC18 Board on Army Science and Technology	937	589	702	690	693	694	692	Continuing	Continuing	
M720 Technical Information Functional Activities	2697	3036	2970	2976	3052	3133	3215	Continuing	Continuing	
M727 Technical Information Activities	3081	2946	2905	3063	3256	3290	3368	Continuing	Continuing	
M729 Youth Science Activities	1962	2283	2089	2109	2123	2137	2133	Continuing	Continuing	
M735 Net Assessment Directorate	0	0	800	800	800	800	800	Continuing	Continuing	
D730 Personnel and Training Analysis Activities	3233	987	2077	2134	2291	2347	2404	Continuing	Continuing	
M733 Acquisition Technology Act	2078	2138	1974	1624	1571	1410	1368	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This program provides for upgrading the accuracy, timeliness, availability, and accessibility of scientific, technical, and management information at all levels of Army Research and Development (R&D). This includes initiatives to improve information derivation, storage, access, display, validation, transmission, distribution, and interpretation. This program addresses the need to increase the competitiveness and availability of scientific, engineering, and technical skills in the DoD and National workforce. It accomplishes this through outreach programs that provide direct working experience for high school students in Army laboratories, thereby exposing these students to the working world of science and engineering. Funding under this program provides for the conduct of analyses, using behavioral science-based analytic tools, to provide policy and decision makers with soldier oriented recommendations concerning manpower, personnel and training issues. This program also provides for science advisors to Commanders-in-Chief (CINCs) and major Army commands and engineering teams to directly solve field Army technical problems. Coordination of this program with other Services is achieved through interservice working groups. The work in this program element is consistent with rigorous peer review and the Army Science and Technology Master Plan (ASTMP). These programs are accomplished under the management of the Army Research Laboratory, the Army Materiel Command, the Army Research Office, the Army Research Institute, the Army Corps of Engineers and the Information Management Office. The projects in this Program Element include management support of Science and Technology efforts and therefore are correctly placed in Budget Activity 6.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605803A Technical Information Activities								DC16	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DC16	Field Assistance in Science and Technology	2477	2694	2734	2793	2848	2923	2999	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> This program focuses Army Materiel Command (AMC) resources to rapidly identify and solve field Army technical problems affecting improved readiness, safety, training, and operations and support (O&amp;S) cost reductions. The Commanding General, AMC, institutionalized AMC Field Assistance in Science and Technology (FAST) in 1988 to plan for and allocate all AMC FAST program funding for projects to support CINCs and commanders and to operate the director's office. FAST tours provide major professional growth for scientists and engineers. Science advisers are recruited from AMC engineering centers to serve Commanders-in-Chief (CINCs) and major Army commanders world-wide and are supported by assigned Quick Reaction Coordinators (QRCs) within each AMC engineering center. All costs associated with science advisor assignments are funded by AMC subordinate commands who supply the science advisers for two to three year tours. FAST manages a level of effort type project with most projects recouping many times their cost in O&amp;S cost savings.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2477 - Provided continuous activity on over 280 FAST projects. Defined, tested and recommended technological solutions to materiel problems identified by CINCs worldwide and prepared operational needs statements and test results for the highest priority programs.</li> <li>- Provided professional growth opportunity for 20 science advisers on two year and three year tours and 40 FAST Junior scientists and engineers on two to eight week tours.</li> <li>- Provided professional growth opportunity for 70 personnel in the Scientists and Engineers Field Experience with Soldiers (SEFEWS) program.</li> </ul> <p>Total 2477</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2638 - Provide continuous activity on over 280 FAST projects. Define, test and recommend technological solutions to materiel problems identified by CINCs worldwide and prepare operational needs statements and test results for the highest priority programs.</li> <li>- Provide professional growth opportunity for 20 science advisers on two year and three year tours and 40 FAST-junior scientists and engineers on two to eight week tours.</li> <li>- Provide professional growth opportunity for 70 personnel in the SEFEWS program.</li> <li>• 56 - Small Business Innovation Research/Small Business Technology Transfer Programs.</li> </ul> <p>Total 2694</p>											

Project DC16

Page 2 of 16 Pages

Exhibit R-2 (PE 0605803A)

1217

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
6 - Management and Support	0605803A Technical Information Activities	DC16																					
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2734 - Provide continuous activity on over 280 FAST projects. Define, test and recommend technological solutions to materiel problems identified by CINCs worldwide and prepare operational needs statements and test results for the highest priority programs.</li> <li>- Provide professional growth opportunity for 20 science advisers on two year and three year tours and 40 FAST Junior scientists and engineers on two to eight week tours.</li> <li>- Provide professional growth opportunity for 70 personnel in the SEFEWS program.</li> </ul> <p>Total 2734</p>																							
<p><b>B. Project Change Summary</b></p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>2739</td> <td>2887</td> <td>3015</td> </tr> <tr> <td>Appropriated Value</td> <td>2798</td> <td>2887</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-321</td> <td>-193</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2477</td> <td>2694</td> <td>2734</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	2739	2887	3015	Appropriated Value	2798	2887		Adjustments to Appropriated Value	-321	-193		FY 1999 President's Budget	2477	2694	2734
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	2739	2887	3015																				
Appropriated Value	2798	2887																					
Adjustments to Appropriated Value	-321	-193																					
FY 1999 President's Budget	2477	2694	2734																				

Project DC16

Page 3 of 16 Pages

Exhibit R-2 (PE 0605803A)

1218

Item 130

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605803A Technical Information Activities								DC18	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DC18	Board on Army Science and Technology	937	589	702	690	693	694	692	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> The Board on Army Science and Technology (BAST) was created in 1982 by the National Research Council (NRC) through its Commission on Engineering and Technology Systems at the request of the Under Secretary of the Army. The BAST designs, conducts, and supervises the NRC's Army-related studies of scientific and technological issues. As such, the BAST defines problems, brings together leading experts to study them, and most importantly, draws conclusions, identifies alternatives and implications, and makes recommendations as appropriate. The major activities of this group include board meetings, special requests, standing committees, study committees and workshops and seminars.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>937 - Provided technical expert support for forecast of Army science and technology needs and respond to immediate science and technology requirements.</li> <li>- Provided experts to participate in peer reviews for annual In-House Laboratory Independent Research (ILIR) and Research and Development Activity (RDA) awards review.</li> <li>- Initiated BAST studies on "Compact Power" and "Logistics Demand".</li> </ul> <p>Total 937</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>574 - Provide technical expert support for forecast of Army science and technology needs and respond to immediate science and technology requirements.</li> <li>- Provide experts to participate in peer reviews for annual ILIR and RDA awards review.</li> <li>- Complete BAST studies on "Compact Power" and "Logistics Demand".</li> <li>- Small Business Innovation Research/Small Business Technology Transfer Programs.</li> </ul> <p>Total 589</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>702 - Provide technical expert support for forecast of Army science and technology needs and respond to immediate science and technology requirements.</li> <li>- Provide experts to participate in peer reviews for annual ILIR and RDA awards review.</li> </ul> <p>Total 702</p>											

Project DC18

Page 4 of 16 Pages

Exhibit R-2 (PE 0605803A)

1219

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605803A Technical Information Activities</b>	<b>DC18</b>	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		675	734
Adjustments to Appropriated Value		690	734
FY 1999 President's Budget		+247	-145
		937	589
			702
Change Summary Explanation: FY 1997 - Funding increased (+262) to support high priority requirement (Logistics Demand study).			

Project DC18

Page 5 of 16 Pages

Exhibit R-2 (PE 0605803A)

1220

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605803A Technical Information Activities								M720	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
COST (In Thousands)											
M720	Technical Information Functional Activities	2697	3036	2970	2976	3052	3133	3215	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Technology transfer activities to support acquisition, storage, and utilization of technical information for both military and domestic applications. Activities supported are: Army participation in the Defense Technical Information Center (DTIC) Work Unit Information Summary (WUIS) database; Army support for the Federated Laboratory Consortium (FLC); the Army Science Board; administration of the Army's Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) in accordance with the "Small Business Research and Development Enhancement Act of 1992". These costs are funded here because the Act prohibits use of PE 0605502 for funding administrative costs, studies and analyses to support the Acquisition Corps acquisition and retention of scientists and engineers and improvement of productivity of laboratories and centers. Technology transfer activities make technical information available to both the public and private sectors to reduce duplication in R&amp;D programs and to increase competitiveness in the U.S. business community. In addition this project provides funding for patent fees and patent legal expenses for all U. S. Army Materiel Command (AMC) subordinate commands and laboratories. The requirement to fund this effort is a result of the Omnibus Budget Reconciliation Act requiring the U. S. Patent and Trademark Office to become a completely user-fee funded agency.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>995 - Continued managerial, programming, database, clerical and personnel support to process, store, control and report the WUIS, on DD1498's.</li> <li>1702 - Provided Army funding support for FLC as required by Public Law 99-502.</li> <li>- Provided administrative and contractual support for the ASB.</li> <li>- Provided administrative support for SBIR/STTR programs.</li> <li>- Provided Army Science and Technology Reports.</li> <li>- Provided funding for patent fees and patent legal expenses for AMC commands and laboratories.</li> <li>- Provided funding for Army Science and Technology Summer Study and awards.</li> <li>- Provided funding for support of Government/Industry Data Exchange Program (GIDEP).</li> </ul>											
Total		2697									
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1044 - Continue managerial, programming, database, clerical and personnel support to process, store, control and report the WUIS, on DD1498's.</li> <li>- Provide Army funding support for FLC as required by Public Law 99-502.</li> <li>- Provide administrative, contractual and travel support for the ASB.</li> <li>1916 - Provide administrative support for SBIR/STTR programs.</li> <li>- Provide Army Science and Technology Reports.</li> <li>- Provide funding for patent fees and patent legal expenses for AMC commands and laboratories.</li> </ul>											

Project M720

Page 6 of 16 Pages

Exhibit R-2 (PE 0605803A)

1221

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605803A Technical Information Activities</b>	<b>M720</b>	
<b>FY 1998 Planned Program: (continued)</b> <ul style="list-style-type: none"> <li>- Provide funding for Army Science and Technology Summer Study and awards.</li> <li>- Provide funding for support of GIDEP.</li> <li>76 - Small Business Innovative Research/Small Business Technology Transfer Programs.</li> </ul>			
Total	3036		
<b>FY 1999 Planned Program:</b> <ul style="list-style-type: none"> <li>969 - Continue managerial, programming, database, clerical and personnel support to process, store, control and report the WUIS, 1498's.</li> <li>- Provide Army funding support for FLC as required by Public Law 99-502.</li> <li>- Provide administrative and contractual support for the ASB.</li> <li>2001 - Provide administrative support for SBIR/STTR programs.</li> <li>- Provide Army Science and Technology Reports.</li> <li>- Provide funding for patent fees and patent legal expenses for AMC commands and laboratories.</li> <li>- Provide funding for Army Science and Technology Summer Study and awards.</li> <li>- Provide funding for support of GIDEP.</li> </ul>			
Total	2970		
<b>B. Project Change Summary</b> FY 1998/1999 President's Budget Appropriated Value Adjustments to Appropriated Value FY 1999 President's Budget			
		FY 1997 2562 2626 +71 2697	FY 1998 3152 3152 -116 3036
			FY 1999 3222 2970

Exhibit R-2 (PE 0605803A)

Page 7 of 16 Pages

Project M720

Item 130

1222

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605803A Technical Information Activities								M727	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M727	Technical Information Activities	3081	2946	2905	3063	3256	3290	3368	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> This project supports development of decision aids, databases, and automation support for the management and execution of the Army Research, Development, Test and Evaluation (RDTE) Appropriation. It includes the hardware, software and contractor support required to develop and implement a set of management decision aids, databases, and hardware/software tools to support technical and budgetary decisions at the Office, Secretary of Defense (OSD), Department of the Army (DA), Corps of Engineers, Army Materiel Command (AMC) and Army Research Laboratory. This project includes support of the Acquisition Management Integration Subgroup (AMIS) dealing with acquisition management systems.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2481 - Continued the S&amp;T database computer engineering support contract.</li> <li>- Continued support to Army S&amp;T strategic planning, analysis, and prioritization.</li> <li>- Continued support to AMC database and Defense Reliance management.</li> <li>- Provided guidance and policy relative to the content, utilization, and requirements of current and future acquisition management systems for AMIS.</li> </ul>											
Total		3081									
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2877 - Continue the S&amp;T database computer engineering support contract.</li> <li>- Continue support to Army S&amp;T strategic planning, analysis, and prioritization.</li> <li>- Continue support to AMC database and Defense Reliance management.</li> <li>- Provide guidance and policy relative to the content, utilization, and requirements of current and future acquisition management systems for AMIS.</li> </ul>											
Total		69									
Total		2946									
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2905 - Continue the S&amp;T database computer engineering support contract.</li> <li>- Continue support to Army S&amp;T strategic planning, analysis, and prioritization.</li> <li>- Continue support to AMC database and Defense Reliance management.</li> <li>- Provide guidance and policy relative to the content, utilization, and requirements of current and future acquisition management systems for AMIS.</li> </ul>											
Total		2905									

Project M727

Page 8 of 16 Pages

Exhibit R-2 (PE 0605803A)

1223

Item 130

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## PROJECT

M727

## BUDGET ACTIVITY

## 6 - Management and Support

### **B. Project Change Summary**

## FY 1998/1999 President's Budget

Appropriated Value

### Adjustments to Appropriated Value

## FY 1999 President's Budget

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
--	----------------	----------------	----------------

2805

2870 3060

+211 -114

3081 2946

FY 1999

3187

3060

-114

2905

Project M727

Page 9 of 16 Pages

**Exhibit R-2 (PE 0605803A)**

1224

Item 130

**UNCLASSIFIED**

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605803A Technical Information Activities								M729	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M729 Youth Science Activities		1962	2283	2089	2109	2123	2137	2133	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Supports science activities to encourage over 100,000 high school youths to develop interest and achieve higher levels in science, engineering, and mathematics. These activities are consolidated within this program to "present the Army" to a potential pool of technical talent to fill future Army needs. No other program fulfills this long-range Army goal. The joint Army/Navy Washington regional area Science and Engineering Apprenticeship Program (SEAP) has been included in the overall effort. This provides an eight week hands-on learning experience for high school students working with bench level scientists within Army laboratories in hopes of encouraging more of them to enter scientific fields of study in the future. This program enhances the National Laboratory Science and Engineering pool, which in turn supports Defense industry, and laboratory needs.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1962 - Continued to foster high school student interest in science, mathematics, engineering and computer science, nationally, by sponsoring Junior Science and Humanities Symposium (JSHS), International Mathematics Olympiad (IMO), and Research and Engineering Apprentice Program (REAP).</li> <li>- Continued the Joint Army/Navy Washington Regional Area SEAP and increased Army Laboratory/RDE Center sponsorship of students.</li> <li>- Continued special tutorial programs for Native Americans, African Americans, and Spanish-speaking Americans designed to increase their chances of attending and completing engineering and/or science curriculum at the university level.</li> <li>- Continued the West Point cadet research internship program to enhance cadet training through field experience within Army research laboratories and centers.</li> </ul>											
Total		1962									
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2226 - Continue to foster high school student interest in science, mathematics, engineering and computer science, nationally, by sponsoring: JSHS, IMO, and REAP.</li> <li>- Continue the Joint Army/Navy Washington Regional Area SEAP and increase Army Laboratory/RDE Center sponsorship of students.</li> <li>- Continue special tutorial programs for Native Americans, African Americans, and Spanish-speaking Americans designed to increase their chances of attending and completing engineering and/or science curriculum at the university level.</li> <li>- Continue the West Point cadet research internship program to enhance cadet training through field experience within Army research laboratories and centers.</li> <li>57 - Small Business Innovation Research/Small Business Technology Transfer Programs.</li> </ul>											
Total		57	2283								
Project M729											

Exhibit R-2 (PE 0605803A)

Page 10 of 16 Pages

Item 130

1225

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																						
<b>6 - Management and Support</b>	<b>0605803A Technical Information Activities</b>		<b>M729</b>																				
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2089 - Continue to foster high school student interest in science, mathematics, engineering and computer science, nationally, by sponsoring: JSHS, IMO, and REAP.</li> <li>- Continue the Joint Army/Navy Washington Regional Area SEAP and increase Army Laboratory/RDE Center sponsorship of students.</li> <li>- Continue special tutorial programs for Native Americans, African Americans, and Spanish-speaking Americans designed to increase their chances of attending and completing engineering and/or science curriculum at the university level.</li> <li>- Continue the West Point cadet research internship program to enhance cadet training through field experience within Army research laboratories and centers.</li> </ul>																							
Total	2089																						
<p><b>B. Project Change Summary</b></p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>2261</td> <td>2372</td> <td>2431</td> </tr> <tr> <td>Appropriated Value</td> <td>2309</td> <td>2372</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-347</td> <td>-89</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>1962</td> <td>2283</td> <td>2089</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	2261	2372	2431	Appropriated Value	2309	2372		Adjustments to Appropriated Value	-347	-89		FY 1999 President's Budget	1962	2283	2089
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	2261	2372	2431																				
Appropriated Value	2309	2372																					
Adjustments to Appropriated Value	-347	-89																					
FY 1999 President's Budget	1962	2283	2089																				
<p>Change Summary Explanation:</p> <p>FY 1997: Funding reprogrammed (-299) to higher priority requirements.</p> <p>FY 1999: Funding reprogrammed (-342) to higher priority requirements.</p>																							

Project M729

Page 11 of 16 Pages

Exhibit R-2 (PE 0605803A)

1226

Item 130

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998															
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																
6 - Management and Support		0605803A Technical Information Activities								M735																
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																
M735	Net Assessment Directorate	0	0	800	800	800	800	800	Continuing	Continuing																
<p><b>A. Mission Description and Justification:</b> The Net Assessment Directorate develops and coordinates net assessments of the standing, trends, and future prospects of U.S. military capabilities and military potential in comparison with those of other countries or groups of countries so as to identify emerging or future threats or opportunities for the United States. This includes, as required, net assessments of: (1) current and projected U.S. and foreign military capabilities by theater, region, function, or mission; and (2) specific current and projected U.S. and foreign capabilities, operational tactics, doctrine, and major categories of weapon systems. The Directorate provides for the preparation of net assessments by the Chairman of the Joint Chiefs of Staff; develops, advises, and consults on the net assessment portion of the Annual Report of the Secretary of Defense to the President and Congress; provides guidance and staff assistance in the development of national net assessments by the National Security Council and acts as the primary Office of the Secretary of Defense (OSD) focal point for joint efforts with the Intelligence Community to produce net assessments; and provides support for the improvement and development of net assessments within the Department of Defense.</p> <p><b>FY 1997 Accomplishments:</b> Program funded in OSD in FY 1997.</p> <p><b>FY 1998 Planned Program:</b> Program funded in OSD in FY 1998.</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 800 - Develop an all source Information Warfare (IW) assessment of U.S. capabilities against potential competitors, which will assist in the development of and IW model.             <ul style="list-style-type: none"> <li>- Develop ideas and strategies for successfully institutionalizing the process of efficient and effective transformation from today's military force structure to a force that is optimized for potentially very different long-term requirements.</li> <li>- Continue multi-year open literature research effort to identify current and evolving foreign perspectives of the Revolution in Military Affairs (RMA), including foreign views of the concept, nature and effects of the RMA; assessment of their ability and desire to participate; implications for existing defense infrastructure; risks associated with the changing conduct of warfare; and expected costs of revolutionary change.</li> </ul> </li> </ul> <p>Total 800</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>0</td> <td>800</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td></td> <td></td> <td></td> </tr> </table> <p>Change Summary Explanation: Funding for FY 1999 for Net Assessment Directorate transferred to Army from OSD.</p> <p>Project M735</p>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	0	Adjustments to Appropriated Value	0	0	800	FY 1999 President's Budget			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																							
Appropriated Value	0	0	0																							
Adjustments to Appropriated Value	0	0	800																							
FY 1999 President's Budget																										

Exhibit R-2 (PE 0605803A)

Page 12 of 16 Pages

Item 130

1227

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605803A Technical Information Activities								D730	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D730	Personnel and Training Analysis Activities	3233	987	2077	2134	2291	2347	2404	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> This project provides for the application of behavioral science-based analytical technologies by the U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences to current and near-term soldier-related issues. The program is focused on policy issues to enhance soldier performance, and provides the Army a unique capability for addressing such issues as the effects of training on individual and unit readiness, the personnel costs of alternative force structures and the effects of a smaller Army on retention and readiness of quality soldiers. Requirements for studies and analyses for critical personnel and training issues of immediate importance are solicited on an annual basis.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>3233 - Developed PC-based model and system to improve job/soldier skills match for use in recruiting and basic training/assignments.</li> <li>- Identified capabilities and actions that can be automated to reduce personnel costs associated with exercise control and feedback functions in a live training environment.</li> <li>- Conducted Army assessment of current soldier attitudes and concerns with regard to the Army's six imperatives.</li> <li>- Analyzed training requirements to enhance skill proficiency for effective backup operations for the digitized battlefield when systems are degraded or disrupted.</li> <li>- Developed plan for longitudinal investigation of the causes of first-term attrition.</li> </ul> <p>Total 3233</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>963 - Derive the information requirements for trainers to control force-on-force simulated battles, and provide the most beneficial feedback to units.</li> <li>- Determine the Force XXI leader training requirements for aviation battle staffs.</li> <li>- Develop method for selection of vehicle drivers to improve safety.</li> <li>- Determine situations when subject-matter-expert ratings of training effectiveness can be substituted for resource-intensive field trials.</li> <li>- Small Business Innovation Research/Small Business Technology Transfer Programs.</li> </ul> <p>Total 24 987</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2077 - Continue analyses of training issues identified by Training and Doctrine Command (TRADOC).</li> <li>- Conduct studies on personnel issues identified by the Chief of Staff of the Army (CSA) and Deputy Chief of Staff for Personnel (DCSPER).</li> </ul> <p>Total 2077</p> <p>Project D730</p>											

Exhibit R-2 (PE 0605803A)

Page 13 of 16 Pages

1228

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
6 - Management and Support		0605803A Technical Information Activities	D730
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		3376	1025
Adjustments to Appropriated Value		3448	1025
FY 1999 President's Budget		-215	-38
		3233	987
			2077
Change Summary Explanation: Funding: FY 1999 (+1044) reprogrammed to address high priority personnel issues, such as attrition, gender integration, and Military Occupational Specialty (MOS) redesign.			
Project D730		Exhibit R-2 (PE 0605803A)	

Page 14 of 16 Pages

Item 130

1229

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
6 - Management and Support		0605803A Technical Information Activities								M733			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
M733	Acquisition Technology Act	2078	2138	1974	1624	1571	1410	1368	Continuing	Continuing			
<p><b>A. Mission Description and Justification:</b> This project provides for the engineering of Army acquisition process improvement through the application of decision support and expert information systems. This project provides funds to conduct analysis and evaluation of alternative acquisition strategies using techniques such as value-added analysis. Supports integrated management activities such as Horizontal Technology Integration and Army Ballistic Missile Defense. This project also provides an environment for the analysis and evaluation of new information technologies, concepts and applications in support of the Army acquisition community's dynamic requirements and for the engineering of Army acquisition process improvement through the application of decision support and expert information systems.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2078 - Developed a simulation and logical modeling test and evaluation environment that provides a prototype development tool in support of technology base initiatives.</li> <li>- Designed application program and user interface utilities for executive level information systems that offer Standard Query Language (SQL) services to Army Acquisition Corps (AAC) corporate and global databases.</li> <li>- Continued analysis of acquisition program financial programming and budgeting requirements. Initiated development of Weapon Systems Handbook, Analytic/Technical Support for Army Science and Technology Programs, Long-Range Planning and Policy Analysis, Resource Allocation Analysis, Cost Tracking and Analysis, Cost Effectiveness and Database Management/Financial Analysis, Synthetic Aperture Radar (SAR) Technology Application Concept Research/Analysis.</li> </ul> <p>Total 2078</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2084 - Continue development of simulation and logical modeling test and evaluation environment that provides a prototype development tool in support of technology base initiatives, and beta test selected modules.</li> <li>- Validate application programs and user interface utilities for executive level information systems that offer SQL services to AAC corporate and global databases.</li> <li>- Continue analysis of acquisition program financial programming and budgeting requirements. Continue development of Weapon Systems Handbook, Analytic/Technical Support for Army Science and Technology Programs, Long-Range Planning and Policy Analysis, Resource Allocation Analysis, Cost Tracking and Analysis, Cost Effectiveness and Database Management/Financial Analysis, SAR Technology Application Concept Research/Analysis.</li> <li>54 - Small Business Innovation Research/Small Business Technology Transfer Programs.</li> </ul> <p>Total 2138</p>													

Project M733

Page 15 of 16 Pages

Exhibit R-2 (PE 0605803A)

1230

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605803A Technical Information Activities</b>	<b>M733</b>																					
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1974 - Validate simulation and logical modeling test and evaluation environment that provides a prototype development tool in support of technology base initiatives.</li> <li>Distribute and beta test application programs and user interface utilities for executive level information systems that offer Standard Query Language (SQL) services to AAC corporate and global databases.</li> <li>Continue analysis of acquisition program financial programming and budgeting requirements. Continue development of Weapon Systems Handbook, Analytic/Technical Support for Army Science and Technology Programs, Long-Range Planning and Policy Analysis, Resource Allocation Analysis, Cost Tracking and Analysis, Cost-Effectiveness and Database Management/Financial Analysis, SAR Technology Application Concept Research/Analysis.</li> </ul>																							
Total	1974																						
<p><b>B. Project Change Summary</b></p> <p>FY 1998/1999 President's Budget</p> <table> <tr> <td>Appropriated Value</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td></td> <td>2134</td> <td>2221</td> <td>2226</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>2180</td> <td>2221</td> <td></td> </tr> <tr> <td></td> <td>-102</td> <td>-83</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2078</td> <td>2138</td> <td>1974</td> </tr> </table> <p>Change Summary Explanation: FY 1999: Funding reprogrammed (-252) to higher priority requirements.</p>				Appropriated Value	FY 1997	FY 1998	FY 1999		2134	2221	2226	Adjustments to Appropriated Value	2180	2221			-102	-83		FY 1999 President's Budget	2078	2138	1974
Appropriated Value	FY 1997	FY 1998	FY 1999																				
	2134	2221	2226																				
Adjustments to Appropriated Value	2180	2221																					
	-102	-83																					
FY 1999 President's Budget	2078	2138	1974																				

Project M733

Page 16 of 16 Pages

Exhibit R-2 (PE 0605803A)

1231

Item 130

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605805A Munitions Standardization Effectiveness and Safety									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		3083	11064	8497	8812	8770	8111	8240	Continuing	Continuing	
DF21	North Atlantic Treaty Organization (NATO) Small Arms Evaluation	269	301	0	0	0	0	0	0	570	
DF24	Conventional Ammunition Demilitarization	1653	9416	4712	4779	4767	4880	5012	Continuing	Continuing	
D293	Field Artillery Ammunition (NATO) Engineering Development	0	81	86	0	0	0	0	0	1672	
D297	Munitions Survivability & Logistics	0	0	2500	2500	2500	2500	2500	Continuing	Continuing	
M296	Pyrotechnic Reliability and Safety	600	686	654	782	774	0	0	0	3496	
M857	Explosive Safety Standards	561	580	545	751	729	731	728	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This Program Element supports continuing technology investigations. It provides a coordinated tri-service mechanism for the collection and free exchange of technical data on the performance and effectiveness of all non-nuclear munitions and weapons systems in a realistic operational environment. It provides for NATO interchangeability testing; joint munitions effectiveness manuals used by all services; development of standardization agreements (STANAGS) and associated Manuals of Proof and Inspection (MOPI); operation of the North American Regional Test Center (NARTC); evaluation of demilitarization methods for existing conventional ammunition; evaluation of useful shelf life, safety, reliability and producibility of pyrotechnic munitions; and improvement of explosives safety criteria for DOD munitions via the DOD Explosives Safety Board. Pyrotechnic Reliability and Safety (M296) supports pyrotechnic research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of pyrotechnics. It will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions. Munitions Survivability and Logistics (D297) will make Army units more survivable by testing and demonstrating munitions logistics system solutions that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Projects in this Program Element support studies and analyses of numerous Army and Joint-Services programs and are correctly placed in Budget Activity 6.

Page 1 of 12 Pages

Exhibit R-2 (PE 0605805A)

**Mission Description and Budget Item Justification:** This Program Element supports continuing technology investigations. It provides a coordinated tri-service mechanism for the collection and free exchange of technical data on the performance and effectiveness of all non-nuclear munitions and weapons systems in a realistic operational environment. It provides for NATO interchangeability testing; joint munitions effectiveness manuals used by all services; development of standardization agreements (STANAGS) and associated Manuals of Proof and Inspection (MOP); operation of the North American Regional Test Center (NARTC); evaluation of demilitarization methods for existing conventional ammunition; evaluation of useful shelf life, safety, reliability and producibility of pyrotechnic munitions; and improvement of explosives safety criteria for DOD munitions via the DOD Explosives Safety Board. Pyrotechnic Reliability and Safety (M296) supports pyrotechnic research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of pyrotechnics. It will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions. Munitions Survivability and Logistics (D297) will make Army units more survivable by testing and demonstrating munitions logistics system solutions that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Projects in this Program Element support studies and analyses of numerous Army and Joint-Services programs and are correctly placed in Budget Activity 6.

UNCLASSIFIED

## UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE		February 1998	
6 - Management and Support		PE NUMBER AND TITLE						PROJECT			
		0605805A Munitions Standardization Effectiveness and Safety						DF21			
COST (/in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DF21	North Atlantic Treaty Organization (NATO) Small Arms Evaluation	269	301	0	0	0	0	0	0	570	
<p><b>A. Mission Description and Justification:</b> This program assures complete interchangeability of small caliber and automated cannon-caliber ammunition and weapons among all NATO countries with all of the associated logistic, strategic and tactical advantages. Project involves development, maintenance and testing compliance of NATO STANAGS and staffing of the NARTC.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 60 Continued to staff, equip and maintain the NARTC for 9mm, 5.56mm and 7.62mm only</li> <li>• 70 Continued to maintain standardization of previously qualified calibers, including the 25mm</li> <li>• 38 Completed implementation of the 6215 pressure transducer for all NATO standardization testing, including 25mm</li> <li>• 42 Other activities, including Partners in Peace initiatives</li> <li>• 32 Initiated facilitization of NARTC for 12.7mm testing</li> <li>• 27 Completed 12.7mm Manual of Proof and Inspection (MOPI)</li> </ul> <p>Total 269</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 60 Continue to staff, equip and maintain the NARTC for 9mm, 5.56mm and 7.62mm only</li> <li>• 70 Continue to maintain standardization of previously qualified calibers, including 25mm</li> <li>• 12 Initiate standardization of 35mm and/or 45mm cased telescoped ammunition</li> <li>• 32 Partners in Peace and other initiatives</li> <li>• 58 Complete facilitization of NARTC for 12.7mm testing</li> <li>• 65 Initiate facilitization of NARTC for 40mm testing</li> <li>• 4 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 301</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999.</p>											

Project DF21

Page 2 of 12 Pages

Exhibit R-2 (PE 0605805A)

1233

Item 131

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>	PROJECT <b>DF21</b>
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management and Support</b>	<b>0605805A Munitions Standardization Effectiveness and Safety</b>		
<b>B. Project Change Summary</b>	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>
FY 1998/1999 President's Budget	274	311	0
Appropriated Value	280	311	
Adjustments to Appropriated Value	-11	-10	0
FY 1999 President's Budget	269	301	0

Exhibit R-2 (PE 0605805A)

Page 3 of 12 Pages

Project DF21

Item 131

1234

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605805A Munitions Standardization Effectiveness and Safety								DF24	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DF24	Conventional Ammunition Demilitarization	1653	9416	4712	4779	4767	4880	5012	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> This project supports a continuing technology evaluation of demilitarization methods for existing conventional ammunition and conventional ammunition recovered from formerly used defense sites (FUDS). It will complete the development and demonstration of new, safe, and environmentally acceptable alternatives to open burning/open detonation (OB/OD) for recovery/recycle/reclamation equipment and processes to reduce the extremely large stockpile of munitions in the resource recovery disposition account and recovered munitions from FUDS.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>653 Continued supercritical water oxidation of carcinogenic/toxic-colored smokes and dyes</li> <li>1000 Continued cryofracture demilitarization for explosives-loaded small munitions</li> <li>Total 1653</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1940 Complete testing and evaluation of prototype SCWO system for demilitarization of colored smokes and dyes</li> <li>1250 Complete development of explosives rework process for cast loaded munitions</li> <li>295 Continue cryofracture development for demilitarization</li> <li>880 Complete fabrication and installation of pilot scale plasma arc technology</li> <li>1038 Complete construction of Explosive Waste Incinerator</li> <li>3780 Conduct demonstration program using commercially available blast chamber technology</li> <li>233 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 9416</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2587 Continue cryofracture development for demilitarization</li> <li>525 Initiate development of recycle/reuse technology for magnesium/aluminum</li> <li>950 Initiate development of recycle/reuse technology for smoke pot oils</li> <li>650 Explore advanced cutting technology</li> <li>Total 4712</li> </ul>											

Project DF24

Page 4 of 12 Pages

Exhibit R-2 (PE 0605805A)

1235

Item 131

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>	PROJECT <b>DF24</b>
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management and Support</b>	<b>0605805A Munitions Standardization Effectiveness and Safety</b>		
<b>B. Project Change Summary</b>	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>
FY 1998/99 President's Budget	1694	4616	4607
Appropriated Value	1731	9716	
Adjustments to Appropriated Value	-78	-300	
FY 1999 President's Budget	1653	9416	4712
Change Summary Explanation: Funding: FY 1998-Undistributed congressional reductions (-300)			

Project DF24

Page 5 of 12 Pages

Exhibit R-2 (PE 0605805A)

1236

Item 131

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998																										
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT																										
6 - Management and Support		0605805A Munitions Standardization Effectiveness and Safety		D293																										
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
D293	Field Artillery Ammunition (NATO) Engineering Development	0	81	86	0	0	0	0	0	1672																				
<p><b>A. Mission Description and Justification:</b> This project supports US/NATO howitzer and ammunition rationalization, standardization, interoperability, and compatibility.</p> <p><b>FY 1997 Accomplishments:</b> Program not funded in FY 1997.</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 50 Engineering support of 155mm joint interoperability requirements</li> <li>• 29 Interoperability testing of Modular Charge System (MCS); translation</li> <li>• 2 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 81</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 50 Engineering support of 155mm joint interoperability requirements</li> <li>• 36 Interoperability testing of NATO projectiles and MCS; translation</li> <li>Total 86</li> </ul> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/99 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>83</td> <td>86</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>83</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>-2</td> <td></td> </tr> <tr> <td></td> <td>0</td> <td>81</td> <td>86</td> </tr> </table>											FY 1998/99 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	83	86	Adjustments to Appropriated Value	0	83		FY 1999 President's Budget	0	-2			0	81	86
FY 1998/99 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	0	83	86																											
Adjustments to Appropriated Value	0	83																												
FY 1999 President's Budget	0	-2																												
	0	81	86																											

Project D293

Page 6 of 12 Pages

Exhibit R-2 (PE 0605805A)

1237

Item 131

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
6 - Management and Support		0605805A Munitions Standardization Effectiveness and Safety		D297					
COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D297 Munitions Survivability & Logistics	0	0	0	2500	2500	2500	2500	Continuing	Continuing
<p><b>A. Mission Description and Justification:</b> This project makes Army units more survivable by investigating, testing and demonstrating munitions logistics system solutions that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, insensitive munitions technology integration, weapon system rearm, explosive incompatibilities in strategic configured loads and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested and evaluated against developed system measures of effectiveness. Optimum, cost effective solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater, and loss of these munitions could cripple the force, jeopardize the mission and result in high loss of life. This project mitigates vulnerabilities and ensures a survivable, effective fighting force.</p> <p><b>FY 1997 Accomplishments:</b> Project not funded in FY 1997.</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1000 Complete design architecture of prototype demonstration level munitions survivability software that allows soldiers to quickly design survivable and efficient ammunition storage sites</li> <li>• 1115 Evaluate Insensitive Munitions (IM) technologies/solutions (energetics, packaging, limited redesign of system components), apply cost effective improvements to specific artillery, mortars, mine and missile ordnance which are not IM compliant, and conduct testing to validate solutions</li> <li>• 385 Design and fabricate advanced composite cylindrical and rectangular ammunition packaging containers that significantly reduce weight, provide rapid access, and increase environment environmental protection and a closure mechanism for next generation large diameter cylindrical containers. Validate thermal model codes by testing materials/configuration changes that reduce thermal loading on munitions</li> </ul> <p>Total 2500</p>									

Project D297

Page 7 of 12 Pages

Exhibit R-2 (PE 0605805A)

1238

Item 131

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
6 - Management and Support	0605805A Munitions Standardization Effectiveness and Safety		D297
		FY 1997	FY 1998
B. Project Change Summary			
FY 1998/99 President's Budget		0	0
Appropriated Value		0	0
Adjustments to Appropriated Value		0	0
FY 1999 President's Budget		0	2500
Change Summary Explanation: Funding: FY 1999 - funds realigned from Ammunition appropriation to fund this critical area.			
Project D297		Exhibit R-2 (PE 0605805A)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
6 - Management and Support		0605805A Munitions Standardization Effectiveness and Safety		M296						
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M296	Pyrotechnic Reliability and Safety	600	686	654	782	774	0	0	0	3496
<p><b>A. Mission Description and Justification:</b> This project will support pyrotechnic research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of pyrotechnics, including training realism. Project will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>300 Developed and lab tested new environmentally friendly organic binder system to replace the existing Laminac/Epoxy binder systems</li> <li>95 Completed a market survey and literature search; initiated preliminary function testing with alternative materials/compositions</li> <li>105 Selected and developed organic coatings for magnesium powders to preclude outgassing. Developed a two chamber reaction system with automatic data acquisition to monitor magnesium outgassing characteristics</li> <li>100 Selected and acquired various pyrotechnic end items for shelf life study. Conducted environmental chamber tests under various temperature and humidity conditions</li> </ul> <p>Total 600</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>369 Continue development of safer pyrotechnic munitions/systems, including Radio Frequency safe designs, reduced fragmentation effects, and tamper resistant configurations</li> <li>150 Conduct parametric formulations, performance characterization/evaluations and optimization of selected alternate magnesium candidates</li> <li>150 Develop organic coatings for magnesium powders. Conduct performance test and evaluations of pyrotechnic compositions containing the coated magnesium</li> <li>17 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 686</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>100 Initiate development and investigate merit of substitutes for carcinogenic and critical materials. Perform preliminary testing to screen candidate materials</li> <li>324 Continue development of safer pyrotechnic munitions/systems, including Radio Frequency safe designs, reduced fragmentation effects, and tamper resistant configurations</li> </ul>										

Project M296

Page 9 of 12 Pages

Exhibit R-2 (PE 0605805A)

1240

Item 131

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
<b>6 - Management and Support</b>	<b>0605805A Munitions Standardization Effectiveness and Safety</b>	<b>M296</b>																					
<p><b>FY 1999 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>110 Complete development of alternate to magnesium. Conduct parametric formulations, performance characterization/evaluations and optimization of selected candidates in white, green and red illuminants</li> <li>120 Continue technology pyrotechnic shelf life study. Conduct environmental tests under various temperature/humidity conditions. Perform function test and evaluation on conditioned items</li> </ul> <p>Total 654</p>																							
<p><b>B. Project Change Summary</b></p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/99 President's Budget</td> <td>667</td> <td>708</td> <td>614</td> </tr> <tr> <td>Appropriated Value</td> <td>682</td> <td>708</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-82</td> <td>-22</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>600</td> <td>686</td> <td>654</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/99 President's Budget	667	708	614	Appropriated Value	682	708		Adjustments to Appropriated Value	-82	-22		FY 1999 President's Budget	600	686	654
	FY 1997	FY 1998	FY 1999																				
FY 1998/99 President's Budget	667	708	614																				
Appropriated Value	682	708																					
Adjustments to Appropriated Value	-82	-22																					
FY 1999 President's Budget	600	686	654																				

Project M296

Page 10 of 12 Pages

Exhibit R-2 (PE 0605805A)

1241

Item 131

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605805A Munitions Standardization Effectiveness and Safety								M857	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M857 Explosive Safety Standards		561	580	545	751	729	731	728	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Supports explosive effects research and testing to quantify hazards and to develop techniques to mitigate these hazards in all DOD manufacturing, testing, transportation, maintenance, storage and disposal of ammunition and explosives operations. Results are essential to the development and improvement of quantity-distance standards, hazard classification procedures, cost effective explosion-resistant facility design procedures, and personnel hazard/protection criteria.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 175 Collected and analyzed data for revising DOD and NATO hazard interpretation for Hazard Divisions 1.1, 1.3, 1.4, and 1.6 ammunition outside and inside structures</li> <li>• 147 Continued development of improved tri-service design procedures and improved computer codes for explosion-resistant structures</li> <li>• 78 Continued development of improved explosives and munitions tests and characterization data</li> <li>• 118 Continued development of improved DOD guidelines for munitions storage facilities</li> <li>• 43 Continued to conduct other hazards analyses and expand/automate explosives safety data bases</li> <li>• Total 561</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 40 Continue to collect and analyze data for revising DOD and NATO hazard interpretation for Hazard Divisions 1.1, 1.3, 1.4, and 1.6 ammunition outside and inside structures</li> <li>• 110 Continue development of improved tri-service design procedures and improved computer codes for explosion-resistant structures</li> <li>• 47 Continue development of improved explosives and munitions tests and characterization data</li> <li>• 288 Develop improved DOD and NATO explosives safety guidelines for munitions storage, explosives operating and field operation facilities</li> <li>• 80 Continue to conduct other hazards analyses and expand/automate explosives safety data bases</li> <li>• 15 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>• Total 580</li> </ul>											

Project M857

Page 11 of 12 Pages

Exhibit R-2 (PE 0605805A)

1242

Item 131

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
6 - Management and Support	0605805A Munitions Standardization Effectiveness and Safety	M857																					
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 100 Collect and analyze airblast/fragment/thermal data for revising DOD, NATO and United Nations hazard classification interpretations for Hazard Divisions 1.1, 1.2, 1.3, 1.4, 1.4S, 1.5 and 1.6</li> <li>• 100 Continue development of improved tri-service design procedures and improved computer codes for explosion-resistant structures</li> <li>• 47 Continue development of improved explosives and munitions tests and characterization data</li> <li>• 218 Continue to develop improved DOD and NATO explosives safety guidelines for munitions storage, explosives operating and field operation facilities</li> <li>• 80 Continue to conduct other hazards analyses and expand/automate explosives safety data bases</li> </ul> <p>Total 545</p>																							
<p><b>B. Project Change Summary</b></p> <table> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/99 President's Budget</td> <td>576</td> <td>599</td> <td>588</td> </tr> <tr> <td>Appropriated Value</td> <td>589</td> <td>599</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Values</td> <td>-28</td> <td>-19</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>561</td> <td>580</td> <td>545</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY 1998/99 President's Budget	576	599	588	Appropriated Value	589	599		Adjustments to Appropriated Values	-28	-19		FY 1999 President's Budget	561	580	545
	FY 1997	FY 1998	FY 1999																				
FY 1998/99 President's Budget	576	599	588																				
Appropriated Value	589	599																					
Adjustments to Appropriated Values	-28	-19																					
FY 1999 President's Budget	561	580	545																				

Project M857

Page 12 of 12 Pages

Exhibit R-2 (PE 0605805A)

1243

Item 131

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

0605853A Environmental Conservation

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1874	1723	3195	3501	3121	3108	3140	Continuing	Continuing
MOCC Environmental Conservation - AMC Test Ranges	1416	1451	2903	3098	2864	2898	2931	Continuing	Continuing
MTCC Environmental Conservation - AMC Major Subordinate Commands/Laboratories	110	144	154	140	141	140	139	Continuing	Continuing
M5CC Environmental Conservation - USASDC	348	128	138	263	116	70	70	Continuing	Continuing

**Mission Description and Budget Item Justification:** This program ensures that resources are available to fund actions specifically required to protect or enhance natural and cultural resources, preserve access to improved and unimproved training areas, and make necessary repairs to minimize erosion and otherwise rehabilitate lands and waters at Army RDTE installations, laboratories and test ranges. No Operation and Maintenance, Army (OMA) appropriation funds are budgeted for environmental conservation efforts at RDTE facilities. It focuses on compliance with natural and cultural resource laws and on responsible management of natural and cultural resources to ensure resources are used wisely and are protected. It finances studies and surveys to identify, inventory, and manage natural (endangered or threatened species, other wildlife, timber, agricultural lands, training areas, etc.) and cultural resources and evaluation of the resources so identified and inventoried; Integrated Training Area Management; preparation of natural and cultural resource management plans; design, construction, maintenance or repair costs specifically required to restore, improve or maintain natural or cultural resources; supplies and equipment required to carry out applicable natural and cultural resources management activities. It includes appropriated RDTE funds attributable to fish, wildlife, agricultural outleasings and timber management activities. It does not include normal maintenance required for appearance, including landscaping, or normal building maintenance associated with present day, non-cultural uses of historic buildings. Army defines environmental effort as: Class O - Project needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental conditions associated with compliance. Class I - support compliance with legally binding agreements or judgments under applicable Federal, State, local or host nation natural or cultural resource environmental laws; correct deficiencies cited in an inspection or notice of violation by a natural or cultural resource regulatory agency, or host nation equivalent; correct deficiencies where a statutory or regulatory deadline has passed; Class II - projects required to comply with an established natural or cultural resource standard, and deadline for compliance is in the future. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

Page 1 of 5 Pages

Exhibit R-2 (PE 0605853A)

1244

Item 132

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605853A Environmental Conservation								MOCC	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
MOCC Environmental Conservation - AMC Test Ranges		1416	1451	2903	3098	2864	2898	2931	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Project MOCC resources in this project ensure an adequate level of funding for environmental natural and cultural resource management requirements, at Yuma Proving Ground (YPG), AZ; Garrison Aberdeen Proving Ground (GAPG), MD; Dugway Proving Ground (DPG), UT; and White Sands Missile Range (WSMR), NM. The operations are critical to the infrastructure and execution of the Army testing mission. Improper management of natural and cultural resources at these installations could shut down the test mission.</p> <p><b>FY 1997 Accomplishment:</b></p> <ul style="list-style-type: none"> <li>1416 Funded Class O, Class I and Class II environmental natural and cultural resource management programs such as management/protection of endangered species, and preservation of cultural resources, national historic preservation, wet lands management/studies and shoreline erosion. Projects accomplished include the Annual Chesapeake Bay Report and Implementation Plan at GAPG; Endangered Species Survey at DPG; Endangered Species Management Plan at WSMR; and Historic Preservation Planning at YPG.</li> </ul> <p>Total 1416</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1415 Fund Class O, Class I and Class II environmental natural and cultural resource management programs such as management/protection of endangered species, and preservation of cultural resources according to the national historic preservation plans. Also funds ecosystem management, wildlife surveys and habitat delineation. Include projects such as Support of Required National Register Sampling and Historic Property Stabilization at GAPG; Natural Resource Management Plan at DPG; Endangered Species Management Plan and Wetland Delineation at WSMR; National Historic Preservation Act Compliance Plan at YPG.</li> <li>36 Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 1451</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2903 Fund Class O, Class I and Class II environmental natural and cultural resource management programs such as management/protection of endangered species, and preservation of cultural resources according to the historic preservation plans. Also fund ecosystem management, wildlife surveys and habitat delineation. Projects such as Pesticide Management at GAPG; Threatened &amp; Endangered Species Survey at DPG; Development of Watershed Management Plan and Wetland ID/Mapping at WSMR; and Preservation &amp; Management-White Tanks National Register District at YPG.</li> </ul> <p>Total 2903</p>											

Project MOCC

Page 2 of 5 Pages

Exhibit R-2 (PE 0605853A)

1245

Item 132

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>6 - Management and Support</b>	<b>0605853A Environmental Conservation</b>		<b>M0CC</b>
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999
Appropriated Value	1467	1498	2636
Adjustments to Appropriated Value	1498	1498	
FY 1999 President's Budget	-82	-47	
	1416	1451	2903
Change Summary Explanation: Funding: FY 1999 funds (+267) required for "must fund" environmental projects.			
Project M0CC		Exhibit R-2 (PE 0605853A)	
Page 3 of 5 Pages		Item 132	

1246

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605853A Environmental Conservation								M1CC																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
M1CC	Environmental Conservation - AMC Major Subordinate Commands/Laboratories	110	144	154	140	141	140	139	Continuing	Continuing																					
<p><b>A. Mission Description and Justification:</b> Project M1CC resources in this project ensure an adequate level of funding for environmental natural and cultural resource management requirements, as discussed in the program element's mission description and budget item justification on page one of this exhibit, at Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; Soldier Systems Command (SSCOM), Natick, MA.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>110 Funded Class I and Class II environmental natural and cultural resource management programs such as required surveys of historical buildings and preservation of the building.</li> </ul> <p>Total 110</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>141 Fund Class I and Class II environmental natural and cultural resource management programs such as required surveys of historical buildings and preservation of the building.</li> <li>3 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR) Programs.</li> </ul> <p>Total 144</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>154 Fund Class I and Class II environmental natural and cultural resource management programs such as required surveys of historical buildings and preservation of the building.</li> </ul> <p>Total 154</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>113</td> <td>148</td> <td>203</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>115</td> <td>148</td> <td></td> </tr> <tr> <td></td> <td>-5</td> <td>-4</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>110</td> <td>144</td> <td>154</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1999 (-49) funds reprogrammed for higher priority requirements.</p> <p>Project M1CC</p>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	113	148	203	Adjustments to Appropriated Value	115	148			-5	-4		FY 1999 President's Budget	110	144	154
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	113	148	203																												
Adjustments to Appropriated Value	115	148																													
	-5	-4																													
FY 1999 President's Budget	110	144	154																												

Exhibit R-2 (PE 0605853A)

Page 4 of 5 Pages

1247

Item 132

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605853A Environmental Conservation								M5CC																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
M5CC Environmental Conservation - USASSDC		348	128	138	263	116	70	70	Continuing	Continuing																					
<p><b>A. Mission Description and Justification:</b> Project M5CC Environmental Conservation - U.S. Army Space and Strategic Defense Command (USASSDC): Resources in this project ensure an adequate level of funding for environmental natural and cultural resource management requirements, at USASSDC.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>348 Continued the development of Historic Preservation Plan for management of historic properties to comply with National Historic Preservation Act.</li> <li>Total 348</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>125 Continue development of Historic Preservation Plan for management of historic properties to comply with National Historic Preservation Act.</li> <li>3 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> <li>Total 128</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>138 Continue development of Historic Preservation Plan for management of historic properties to comply with National Historic Preservation Act</li> <li>Total 138</li> </ul> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>143</td> <td>132</td> <td>138</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>146</td> <td>132</td> <td></td> </tr> <tr> <td></td> <td>+202</td> <td>-4</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>348</td> <td>128</td> <td>138</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1997 funds (+202) reprogrammed for environmental projects.</p>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	143	132	138	Adjustments to Appropriated Value	146	132			+202	-4		FY 1999 President's Budget	348	128	138
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	143	132	138																												
Adjustments to Appropriated Value	146	132																													
	+202	-4																													
FY 1999 President's Budget	348	128	138																												

Project M5CC

Page 5 of 5 Pages

Exhibit R-2 (PE 0605853A)

1248

Item 132

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1249

Item 132

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
February 1998										
BUDGET ACTIVITY										
PE NUMBER AND TITLE										
6 - Management and Support										
0605854A Pollution Prevention										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	13413	5187	8694	13401	6396	6381	6330	Continuing	Continuing	
MOPP Pollution Prevention - AMC Test Ranges	517	0	1157	841	745	746	741	Continuing	Continuing	
M1PP Pollution Prevention - AMC Major Subordinate Commands/Laboratories	137	151	147	128	122	119	118	Continuing	Continuing	
M5PP Pollution Prevention - USASDC	2051	2219	1141	1164	403	401	398	Continuing	Continuing	
M7PP Pollution Prevention - Ozone Depleting Chemicals (ODC) Elimination	763	0	0	6114	0	0	0	Continuing	Continuing	
M8PP Pollution Prevention - Acquisition Pollution Prevention	9945	2817	6249	5154	5126	5115	5073	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This program funds the non-research portion of the Army's RDTE funded environmental pollution prevention program. It finances primarily test and evaluation pollution prevention efforts addressing environmental compliance and mission readiness issues affecting Army weapon systems; supporting industrial facilities; and RDTE funded installations, laboratories and test ranges. Pollution prevention is any action designed to reduce or eliminate (rather than control or treat), through source reduction actions, the procurement and use of hazardous materials and the generation of hazardous waste; more efficient use of natural resources; recycling; and/or reduced emissions of toxins and other waste to the environment. Acquisition pollution prevention addresses the adverse impact of hazardous materials and hazardous waste on the operational readiness of Army weapon systems and facilities. Issues include prove-out/engineering of alternatives to (1) ozone-depleting chemicals and (2) hazardous and toxic chemicals and materials used in weapon system fire protection, cooling and refrigeration applications, manufacturing and maintenance processes and specialized test practices throughout the weapon system life cycle. These activities account for approximately 90 percent of the hazardous waste generated by the U.S. Army. This program includes the review and revision of standardized technical documentation containing design, procurement and maintenance requirements, and procedures supporting materiel procurement such as the Joint Group for Acquisition Pollution Prevention. No Operations and Maintenance, Army (OMA) funds are programmed for these purposes. Projects under this program meet Army definitions: Class O - Projects needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental condition associated with compliance; Class I - support compliance with legally binding agreements or judgments under applicable federal, state, local or host nation environmental laws; Class II - projects required to comply with established standard, and deadline for compliance in the future. Class I and II projects comply with the Montreal Protocol, the Clean Air Act, the Pollution Prevention Act, the Emergency Planning and Right-to-Know Act, and Executive Order 12856 (and others). The program supports installations and operations required for general research and development use and therefore is appropriate to Budget Activity 6.

Exhibit R-2 (PE 0605854A)

Page 1 of 7 Pages

1250

Item 133

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 6 - Management and Support

PE NUMBER AND TITLE

## 0605854A Pollution Prevention

PROJECT

M0PP

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0PP Pollution Prevention - AMC Test Ranges	517	0	1157	841	745	746	741	Continuing	Continuing

**A. Mission Description and Justification:** Project M0PP - Pollution Prevention - AMC Test Ranges: Resources in this project ensure an adequate level of funding for pollution prevention requirements, at Yuma Proving Ground (YPG), AZ; Garrison Aberdeen Proving Ground (GAPG), MD; Dugway Proving Ground (DPG), UT; and White Sands Missile Range (WSMR), NM. These operations are critical to the infrastructure and execution of the Army testing mission.

**FY 1997 Accomplishments:**

- 517 Funded Class O, Class I and Class II pollution prevention projects such as reporting of Toxic Release Inventories, solid and hazardous waste reduction programs, implementation of storm water pollution prevention plans, purchase of spill response supplies and equipment, etc. Projects accomplished include Natural Gas Conversion of Boilers at APG; Development of Pollution Prevention Plan at DPG; and Natural Gas Refueling Station at WSMR.

Total 517

**FY 1998 Planned Program:** Project is not funded in FY 1998.

**FY 1999 Planned Program:**

- 1157 Fund Class O, Class I and Class II pollution prevention programs and projects. Programs such as reporting of Toxic Release Inventories, solid and hazardous waste reduction programs, implementation of storm water pollution prevention plans, purchase of spill response supplies and equipment, etc. Also fund Emergency Planning and Community Right-to-Know Act (EPCRA) compliance preventive projects. Include projects such as Chlorine Replacement - Water treatment and Closed Loop Washrack at GAPG; Implementation of Pollution Prevention Opportunities at DPG; Yard Waste and Tire Shredder at WSMR; and Executive Order 12856 Implementing Strategy at YPG.

Total 1157

**B. Project Change Summary**

FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
534	0	1248
546		
-25		
517	0	1157

Project M0PP

Page 2 of 7 Pages

Exhibit R-2 (PE 0605854A)

1251

Item 133

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605854A Pollution Prevention								M1PP	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M1PP	Pollution Prevention - AMC Major Subordinate Commands/Laboratories	137	151	147	128	122	119	118	Continuing	Continuing	
<b>A. Mission Description and Justification:</b> Project M1PP - Pollution Prevention - AMC Major Subordinate Commands/Laboratories: Resources in this project ensure an adequate level of funding for pollution prevention requirements, at Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; Soldier Systems Command (SSCOM), Natick, MA; and Army Research Laboratory Materials Technology Directorate (ARLMTD), APG, MD.											
<b>FY 1997 Accomplishments:</b>											
•		137	Funded Class I and Class II pollution prevention programs such as waste solvent replacement programs, purchase of alternate fuel vehicles, construction of sound-absorbing barriers, implementation of storm water pollution prevention plans, purchase of spill response equipment, etc.								
Total		137									
<b>FY 1998 Planned Program:</b>											
•		147	Fund Class I and Class II pollution prevention programs such as waste solvent replacement programs, purchase of alternate fuel vehicles, construction of sound-absorbing barriers, implementation of storm water pollution prevention plans, purchase of spill response equipment, etc.								
•		4	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs								
Total		151									
<b>FY 1999 Planned Program:</b>											
•		147	Fund Class I and Class II pollution prevention programs such as waste solvent replacement programs, purchase of alternate fuel vehicles, construction of sound-absorbing barriers, implementation of storm water pollution prevention plans, purchase of spill response equipment, etc.								
Total		147									
<b>B. Project Change Summary</b>											
FY 1998/1999 President's Budget		FY 1997	FY 1998	FY 1999							
Appropriated Value		140	156	159							
Adjustments to Appropriated Value		143	156								
FY 1999 President's Budget		-6	-5								
		137	151	147							
Page 3 of 7 Pages										Exhibit R-2 (PE 0605854A)	
Project M1PP											

1252

Item 133

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605854A Pollution Prevention								M5PP																					
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
M5PP	Pollution Prevention - USASSDC	2051	2219	1141	1164	403	401	398	Continuing	Continuing																					
<p><b>A. Mission Description and Justification:</b> Project M5PP - U.S. Army Space and Strategic Defense Command (USASSDC): Resources in this project ensure an adequate level of funding for pollution prevention requirements at the USASSDC.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2051 Funded pollution prevention programs such as hazardous material satellite areas, recycling of metals, Halon reduction, pollution prevention, etc.</li> </ul> <p>Total 2051</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2164 Fund pollution prevention programs such as hazardous material satellite areas, recycling of metals, Halon reduction, pollution prevention, etc.</li> <li>• 55 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 2219</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1141 Fund pollution prevention programs such as hazardous material satellite areas, recycling of metals, Halon reduction, pollution prevention, etc.</li> </ul> <p>Total 1141</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>1916</td> <td>2290</td> <td>1231</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>1957</td> <td>2290</td> <td></td> </tr> <tr> <td></td> <td>94</td> <td>-71</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>2051</td> <td>2219</td> <td>1141</td> </tr> </table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	1916	2290	1231	Adjustments to Appropriated Value	1957	2290			94	-71		FY 1999 President's Budget	2051	2219	1141
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	1916	2290	1231																												
Adjustments to Appropriated Value	1957	2290																													
	94	-71																													
FY 1999 President's Budget	2051	2219	1141																												

Project M5PP

Page 4 of 7 Pages

Exhibit R-2 (PE 0605854A)

1253

Item 133

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605854A Pollution Prevention								M7PP																					
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
M7PP Pollution Prevention - Ozone Depleting Chemicals (ODC) Elimination		763	0	0	6114	0	0	0	Continuing	Continuing																					
<p><b>A. Mission Description and Justification:</b> Project M7PP - Pollution Prevention - ODC Elimination: Develop and implement the Army program to eliminate the use of ozone depleting chemicals on/for weapon systems. The program has been developed due to International Agreements (Montreal Protocol) Title VI of the Clean Air Act of 1990 and section 326 of P.L. 102-484. Funding for this program has been transferred to 0605854/M8PP Pollution Prevention - Acquisition Pollution Prevention beginning with FY 2001.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 125 Tested and Evaluated alternative Chemical-Biological Protective Overgarments testing agents</li> <li>• 125 Tested and Evaluated Nuclear Biological Protective Filter agents</li> <li>• 104 Developed Fire Safety Test Enclosure</li> <li>• 409 Tested and Evaluated Ammunition Inspection Cleaning Process Alternatives</li> <li>Total 763</li> </ul> <p><b>FY 1998 Planned Program:</b> Project is not funded in FY 1998.</p> <p><b>FY 1999 Planned Program:</b> Project is not funded in FY 1999.</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>782</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>799</td> <td>0</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-36</td> <td></td> <td></td> </tr> <tr> <td></td> <td>763</td> <td>0</td> <td>0</td> </tr> </table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	782	0	0	Adjustments to Appropriated Value	799	0		FY 1999 President's Budget	-36				763	0	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	782	0	0																												
Adjustments to Appropriated Value	799	0																													
FY 1999 President's Budget	-36																														
	763	0	0																												

Exhibit R-2 (PE 0605854A)

Page 5 of 7 Pages

Project M7PP

1254

Item 133

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605854A Pollution Prevention								M8PP	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M8PP	Pollution Prevention - Acquisition Pollution Prevention	9945	2817	6249	5154	5126	5115	5073	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Project M8PP - Pollution Prevention - Acquisition Pollution Prevention: Develop and implement the Army Acquisition Pollution Prevention program to reduce requirements for hazardous materials and toxic chemicals used throughout the weapon system life cycle. The program supports Army compliance with the Montreal Protocol, the Clean Air Act, the Pollution Prevention Act and Executive Order 12856 (and others). This program primarily funds test and evaluation of environmentally acceptable alternative materials and processes used in weapon system design, testing, production, maintenance, operation and support. Issues directly affecting operational readiness of weapon systems and supporting facilities take top priority. Support is also provided for the Joint Group for Acquisition Pollution Prevention.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 675 Toxicological Assessment of Alternative New Materials</li> <li>• 300 Program Management and Oversight</li> <li>• 1715 Tested and Evaluated Alternative Materials and Process Related to Paint Coating and Stripping Processes, Engine Oil Life Extension and Propylene Glycol Antifreeze</li> <li>• 300 Tested and Evaluated Aviation Materials and Processes (Non-Chromate Processes)</li> <li>• 610 Tested and Evaluated Alternative Materials and Processes for Missile Production (Powder Coating Processes and Alternative Fuels)</li> <li>• 250 Implemented Laser Stripping Processes for Helicopter Components</li> <li>• 1819 Tested and Evaluated Ammunition/Munitions Production</li> <li>• 500 Tested and Evaluated Alternative Battery Production</li> <li>• 450 Tested and Evaluated Chemical Biological Defense Test Procedures</li> <li>• 125 Tested and Evaluated Soldier System products</li> <li>• 200 Developed Solvent Substitution Selection Procedures</li> <li>• 1281 Developed Fire Safety Test Enclosure</li> <li>• 250 Funded Joint Group for Acquisition Pollution Prevention (JG-APP)</li> <li>• 1470 Implemented Alternative Processes at Depots, Arsenals and Ammunition</li> <li>Total 9945</li> </ul>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 302 Toxicological Assessment of Alternative New Materials</li> <li>• 350 Program Management and Oversight</li> <li>• 450 Test and Evaluation related to Ammunition/Munition Production (test procedures, tracer composition, sealing and coating)</li> </ul>											
Project M8PP										Exhibit R-2 (PE 0605854A)	

Page 6 of 7 Pages

1255

Item 133

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
6 - Management and Support		PE NUMBER AND TITLE	M8PP
		0605854A	Pollution Prevention
FY 1998 Planned Program: (continued)			
•	350	Test and Evaluation related to Aviation and Missile Production (powder coating, and alternative fuels)	
•	250	Test and Evaluation related to Electronics Production and Support (batteries)	
•	250	Test and Evaluation related to Chemical Biological Defense test procedures.	
•	75	Test and Evaluation related to Soldier System test procedures	
•	694	Process Support in the Industrial Base.	
•	25	Joint Group for Acquisition Pollution Prevention	
•	71	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.	
	Total	2817	
FY 1999 Planned Program:			
•	500	Toxicological Assessment of Alternative New Materials	
•	250	Program Management and Oversight	
•	1000	Test and Evaluation related to Ammunition/Munition Production	
•	825	Test and Evaluation related to Aviation and Missile Production	
•	530	Test and Evaluation related to Electronics Production and Support	
•	650	Test and Evaluation related to Chemical Biological Defense	
•	250	Test and Evaluation related to Soldier System	
•	1799	Process Support in the Industrial Base	
•	195	Process Support to the Test Activities	
•	250	Joint Group for Acquisition Pollution Prevention	
	Total	6249	
B. Project Change Summary			
FY 1998/1999 President's Budget		FY 1998	FY 1999
Appropriated Value		2907	2043
Adjustments to Appropriated Value		2907	
FY 1999 President's Budget		-90	
		2817	6249
Change Summary Explanation: Funding: FY 1999 increase (+4206) required for "must fund" environmental projects.			
Project M8PP		Exhibit R-2 (PE 0605854A)	
		Page 7 of 7 Pages	

Page 7 of 7 Pages

Exhibit R-2 (PE 0605854A)

1256

Item 133

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1257

Item 133

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605856A Environmental Compliance - Research, Development, Testing & Evaluation									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	52716	56576	44116	40365	38356	38415	38320	Continuing	Continuing	
M0VV	Environmental Compliance - AMC Test Ranges	33333	35523	32296	28746	27678	27718	27660	Continuing	Continuing	
M1VV	Environmental Compliance - AMC Major Subordinate Commands/Laboratories	13503	12335	9946	10125	9010	9024	8987	Continuing	Continuing	
M4VV	Environmental Compliance - Corps of Engineers	1430	6784	0	0	0	0	0	Continuing	Continuing	
M5VV	Environmental Compliance - USASDC	4450	1934	1874	1494	1668	1673	1673	Continuing	Continuing	

**Mission Description and Budget Item Justification:** This program ensures that resources are available to fund legally mandated environmental compliance activities at U.S. Army RDTE installations, laboratories and test ranges. (No Operation and Maintenance, Army (OMA) appropriation funds are budgeted for environmental compliance efforts at RDTE facilities). It finances environmental staff salaries; minor construction, repair and upgrade of facilities to meet environmental standards, including waste treatment and disposal; radon abatement; repair and clean up of underground storage tank hazards; management of hazardous waste storage and disposal; permits and licensing fees; environmental training, plans and studies; and environmental monitoring and audits. Funds cost of complying with Federal Facility Compliance Agreements (FFCA) and other environmental agreements, and correcting notices of violation. It does not finance construction or repairs unrelated to environmental compliance or Defense Environmental Restoration Account (DERA) funded environmental restoration. In summary, this program provides for environmental quality control of current defense operations and disposal of hazardous waste incident to defense operations funded by the RDTE appropriation. Army defines environmental effort as: Class O - projects needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental conditions associated with compliance. Class I - support compliance with legally binding agreements or judgments under applicable federal, state, local or host nation environmental law; correct deficiencies cited in an inspection or notice of violation by a regulatory agency, or host nation equivalent; correct deficiencies where a statutory or regulatory deadline has passed; Class II - projects required to comply with an established standard, and deadline for compliance is in the future; Class III - salaries and training for environmental personnel and projects required to maintain/improve environmental quality, but where non-compliance is not imminent. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate for Budget Activity 6.

Page 1 of 7 Pages

Exhibit R-2 (PE 0605856A)

**Mission Description and Budget Item Justification:** This program ensures that resources are available to fund legally mandated environmental compliance activities at U.S. Army RDTE installations, laboratories and test ranges. (No Operation and Maintenance, Army (OMA) appropriation funds are budgeted for environmental compliance efforts at RDTE facilities). It finances environmental staff salaries; minor construction, repair and upgrade of facilities to meet environmental standards, including waste treatment and disposal; radon abatement; repair and clean up of underground storage tank hazards; management of hazardous waste storage and disposal; permits and licensing fees; environmental training, plans and studies; and environmental monitoring and audits. Funds cost of complying with Federal Facility Compliance Agreements (FFCA) and other environmental agreements, and correcting notices of violation. It does not finance construction or repairs unrelated to environmental compliance or Defense Environmental Restoration Account (DERA) funded environmental restoration. In summary, this program provides for environmental quality control of current defense operations and disposal of hazardous waste incident to defense operations funded by the RDTE appropriation. Army defines environmental effort as: Class O - projects needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental conditions associated with compliance. Class I - support compliance with legally binding agreements or judgments under applicable federal, state, local or host nation environmental law; correct deficiencies cited in an inspection or notice of violation by a regulatory agency, or host nation equivalent; correct deficiencies where a statutory or regulatory deadline has passed; Class II - projects required to comply with an established standard, and deadline for compliance is in the future; Class III - salaries and training for environmental personnel and projects required to maintain/improve environmental quality, but where non-compliance is not imminent. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate for Budget Activity 6.

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

### BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

**0605856A Environmental Compliance - Research, Development, Testing & Evaluation**

## PROJECT

## MOVV

COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0VV	Environmental Compliance - AMC Test Ranges	33333	35523	32296	28746	27678	27718	27660	Continuing	Continuing

**A. Mission Description and Justification:** Project MOVV - Environmental Compliance - AMC Test Ranges: Resources in the project ensure an adequate level of funding for legally mandated environmental compliance requirements at Yuma Proving Ground (YPG), AZ; Garrison Aberdeen Proving Ground (GAPG), MD; Dugway Proving Ground (DPG), UT; and White Sands Missile Range (WSMR), NM. These operations are critical to the infrastructure of the Army testing program.

**FY 1997 Accomplishments:**

- 33333 Funded Class O, Class I, Class II, and other "Must Fund" environmental compliance programs and projects. Programs such as underground storage tank removal/remediation, Environmental Impact Statement, asbestos disposal, wastewater compliance, expansion of solid waste landfill, backflow prevention program and closure of solid waste management units. Also funds hazardous waste disposal and program management. Projects accomplished include Above Ground Tank Testing, Repairs & Upgrade and Permitting for National Pollutant Discharge Elimination System Wastewater at GAPG; Master Planning Environmental Impact Statement at DPG; Sewage Treatment Plants-Phase I at WSMR; and Underground Storage Tank Site Characterization and Integrated Natural Resources Management Plan-Implementation Phase at YPG.

Total 333333

**FY 1998 Planned Program:**

- |       |  |
|-------|--|
| 34847 | Fund Class O, Class I, Class II, and other "Must Fund" environmental compliance programs and projects. Programs such as underground storage tank removal/remediation, Environmental Impact compliance, expansion of solid waste landfill, backflow prevention program and closure of solid waste management units. Also funds hazardous waste disposal and program management. Include projects such as Hazardous Materials Inventory/Tracking/Reporting/Compliance and Solid Waste Compliance Management at GAPG; Management of Central Storage Facility at DPG; Monitoring of Drinking (Ground) Water at WSMR; and Sample & Analysis of Depleted Uranium at YPG. |
| 676   | Small Business Innovative Research/Small Business (SBIR/STTR) Programs.  |

Total	35523
-------	-------

## Project MOVV

Page 2 of 7 Pages

Exhibit R-2 (PE 0605856A)

Item 134

1259

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
6 - Management and Support	0605856A Environmental Compliance - Research, Development, Testing & Evaluation	MOVV																					
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>32296 Fund Class O, Class I, Class II, and other "Must Fund" environmental compliance programs and projects. Programs such as underground storage tank removal/remediation, Environmental Impact Statement, asbestos disposal, wastewater compliance, expansion of solid waste landfill, backflow prevention program and closure of solid waste management units. Also funds hazardous waste disposal and program management. Include projects such as Inflow/Infiltration Reduction at GAPG; Permit Application for Open Burning &amp; Open Denotation at DPG; Sewage Lagoon at WSMR; and Storm Water Control at YPG.</li> </ul> <p>Total 32296</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>34126</td> <td>36655</td> <td>34849</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>34856</td> <td>36655</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-1523</td> <td>-1132</td> <td></td> </tr> <tr> <td></td> <td>33333</td> <td>35523</td> <td>32296</td> </tr> </table>				FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	34126	36655	34849	Adjustments to Appropriated Value	34856	36655		FY 1999 President's Budget	-1523	-1132			33333	35523	32296
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																				
Appropriated Value	34126	36655	34849																				
Adjustments to Appropriated Value	34856	36655																					
FY 1999 President's Budget	-1523	-1132																					
	33333	35523	32296																				

Exhibit R-2 (PE 0605856A)

Page 3 of 7 Pages

Project MOVV

1260

Item 134

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605856A Environmental Compliance - Research, Development, Testing & Evaluation								M1VV	
	COST (In Thousands)										
M1VV	Environmental Compliance - AMC Major Subordinate Commands/Laboratories										
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
		13503	12335	9946	10125	9010	9024	8987	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Project M1VV - Environmental Compliance - AMC MSC/LAB: Resources in this project ensure an adequate level of funding for legally mandated environmental compliance requirements at Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; and Soldier Systems Command (SSCOM), Natick, MA.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>13503 Funded Class I, Class II, and other environmental programs, such as, drinking water cross-connection program and compliance with sewage prevention requirement at ARDEC; upgrade of fume hood exhaust controls and underground storage tank compliance requirements. Fund remaining compliance requirements such as hazardous waste disposal and program management.</li> </ul> <p>Total 13503</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>12278 Fund Class I, Class II, and other environmental programs, such as, drinking water cross-connection program and compliance with sewage prevention requirement at ARDEC; continue upgrade of fume hood exhaust controls and underground storage tank compliance program; Fund compliance requirements such as hazardous waste disposal and program management.</li> <li>57 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 12335</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>9946 Fund Class I, Class II, and other environmental programs, such as, drinking water cross-connection program and compliance with sewage prevention requirement; underground storage tank compliance program. Fund remaining compliance requirements such as hazardous waste disposal and program management.</li> </ul> <p>Total 9946</p>											
Project M1VV										Exhibit R-2 (PE 0605856A)	
Page 4 of 7 Pages										Item 134	

1261

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
6 - Management and Support	0605856A Environmental Compliance - Research, Development, Testing & Evaluation		M1VV
B. Project Change Summary			
FY 1997	FY 1998	FY 1999	
13680	12727	10733	
13972	12727		
-469	-372		
13503	12335	9946	
FY 1998/1999 President's Budget			
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget			
Project M1VV		Page 5 of 7 Pages	Exhibit R-2 (PE 0605856A)

Item 134

1262

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																			
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																				
6 - Management and Support		0605856A Environmental Compliance - Research, Development, Testing & Evaluation								M4VV																				
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
COST (In Thousands)																														
M4VV	Environmental Compliance - Corps of Engineers	1430	6784	0	0	0	0	0	Continuing	Continuing																				
<p><b>A. Mission Description and Justification:</b> Project M4VV-Environmental Compliance - Corps of Engineers: Resources in this project are for an industry cost-shared demonstration of a 3000 HP low emission natural gas boiler. The funds went to Construction Engineering Research Laboratory (CERL) for Industry cost-shared demonstration of low emission boiler at 2 Army sites and for industry cost-shared demonstration for privatized fuel cell combined heat electrical supply technology at approximately 20 sites.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1430 Developed with industry cost-shared demonstration of a 3000 HP low emission natural gas boiler.</li> <li>Total 1430</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>6614 Industry cost-shared demonstration of low emission boiler at 2 Army sites and Industry cost shared demonstration for privatized fuel cell combined heat and electrical supply technology at approximately 20 sites.</li> <li>170 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 6784</li> </ul> <p><b>FY 1999 Planned Program:</b> Project is not funded in FY 1999.</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>1469</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>1500</td> <td>7000</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-70</td> <td>-216</td> <td></td> </tr> <tr> <td></td> <td>1430</td> <td>6784</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1999 increase (+7000) is a Congressional plus-up.</p>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	1469	0	0	Adjustments to Appropriated Value	1500	7000		FY 1999 President's Budget	-70	-216			1430	6784	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	1469	0	0																											
Adjustments to Appropriated Value	1500	7000																												
FY 1999 President's Budget	-70	-216																												
	1430	6784	0																											

Project M4VV

Page 6 of 7 Pages

Exhibit R-2 (PE 0605856A)

1263

Item 134

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

6 - Management and Support

0605856A Environmental Compliance - Research, Development, Testing & Evaluation  
M5VV

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M5VV Environmental Compliance - USASDC	4450	1934	1874	1494	1668	1673	1673	Continuing	Continuing

**A. Mission Description and Justification:** Project M5VV - Environmental Compliance - U.S. Army Space and Strategic Defense Command (USASSDC): Resources in this project ensure an adequate level of funding for legally mandated environmental compliance requirements at the USASDC.

**FY 1997 Accomplishments:**

- 4450 Funded environmental compliance programs such as PCB removal, testing for hazardous materials, shipment and disposal of hazardous wastes, environmental staff training, water quality, clean up fuel/oil contamination, underground storage tank compliance, asbestos removal and shipment, mitigation monitoring, etc.

Total 4450

**FY 1998 Planned Program:**

- 1885 Fund environmental compliance programs such as PCB removal, testing for hazardous materials, shipment and disposal of hazardous wastes, environmental staff training, water quality, clean up fuel/oil contamination, underground storage tank compliance, asbestos removal and shipment, mitigation monitoring, etc.

- 49 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 1934

**FY 1999 Planned Program:**

- 1874 Fund environmental compliance programs such as PCB removal, testing for hazardous materials, shipment and disposal of hazardous wastes, environmental staff training, water quality, clean up fuel/oil contamination, underground storage tank compliance, asbestos removal and shipment, mitigation monitoring, etc.

Total 1874

**B. Project Change Summary**

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

Change Summary Explanation: Funding: FY 1997 reduction (-526) reprogrammed to higher priority requirements.

FY 1997

4976

5083

-633

4450

FY 1998

1996

1996

-62

1934

FY 1999

2022

1874

Project M5VV

Page 7 of 7 Pages

Exhibit R-2 (PE 0605856A)

1264

Item 134

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

Item 134

1265

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605876A Minor Construction - Research, Development, Testing & Evaluation									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		4148	4258	4205	4097	4085	4096	4091	Continuing	Continuing	
M0WW Minor Construction - Test Ranges		2642	2662	2601	2628	2651	2661	2660	Continuing	Continuing	
M1WW Minor Construction - AMC Subordinate Commands and Laboratories		1038	1098	1127	1020	999	1001	998	Continuing	Continuing	
M4WW Minor Construction - Corps of Engineers		468	498	477	449	435	434	433	Continuing	Continuing	
<b>Mission Description and Budget Item Justification:</b> This program element finances activities and functions necessary to provide facility related minor construction for U.S. Army RDTE installations, laboratories and test ranges. Minor construction includes: erection, installation, or assembly of a new real property facility; expansion, extension, alteration, conversion, relocation or replacement of an existing real property facility. Includes design costs directly associated with accomplishing a designated project undertaking. These projects substantially prolong the useful life of the facility and are all actually facility investments. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.											

Page 1 of 7 Pages

Exhibit R-2 (PE 0605876A)

Page 1 of 7 Pages

Exhibit R-2 (PE 0605876A)

1266

Item 135

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605876A Minor Construction - Research, Development, Testing & Evaluation								MOWW	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
MOWW Minor Construction - Test Ranges		2642	2662	2601	2628	2651	2661	2660	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Finances RDTE minor construction projects for U.S. Army Materiel Command (AMC) technical test ranges assigned to Test and Evaluation Command (TECOM), i.e., Yuma Proving Ground, AZ; Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; and White Sands Missile Range, NM. In addition, project provides common service host support for over 100 tenants and satellites located on these four TECOM ranges. Facility assets managed include over approximately 4 million acres of land, over 24 million square feet of building space, 3 thousand miles of roads, and 2 thousand miles of utility lines.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 1374 Funded minor construction projects at Aberdeen Proving Ground, MD</li> <li>• 291 Funded minor construction projects at Dugway Proving Ground, UT</li> <li>• 660 Funded minor construction projects at White Sands Missile Range, NM</li> <li>• 317 Funded minor construction projects at Yuma Proving Ground, AZ</li> <li>Total 2642</li> </ul>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1350 Fund minor construction projects at Aberdeen Proving Ground, MD</li> <li>• 285 Fund minor construction projects at Dugway Proving Ground, UT</li> <li>• 649 Fund minor construction projects at White Sands Missile Range, NM</li> <li>• 311 Fund minor construction projects at Yuma Proving Ground, AZ</li> <li>• 67 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 2662</li> </ul>											
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1352 Fund minor construction projects at Aberdeen Proving Ground, MD</li> <li>• 286 Fund minor construction projects at Dugway Proving Ground, UT</li> <li>• 650 Fund minor construction projects at White Sands Missile Range, NM</li> <li>• 313 Fund minor construction projects at Yuma Proving Ground, AZ</li> <li>Total 2601</li> </ul>											
Project MOWW										Exhibit R-2 (PE 0605876A)	

Page 2 of 7 Pages

1267

Item 135

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support		MOWW	
0605876A Minor Construction - Research, Development, Testing & Evaluation			
B. Project Change Summary			
FY 1998/1999 President's Budget		FY 1998	FY 1999
Appropriated Value		2746	2807
Adjustments to Appropriated Value		2746	
FY 1999 President's Budget		-84	
		2662	2601

Exhibit R-2 (PE 0605876A)

Page 3 of 7 Pages

Project MOWW

1268

Item 135

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
6 - Management and Support	0605876A Minor Construction - Research, Development, Testing & Evaluation	M1WW		
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate
M1WW Minor Construction - AMC Subordinate Commands and Laboratories		1038	1098	1127
			FY 2000 Estimate	FY 2001 Estimate
			1020	999
			FY 2002 Estimate	FY 2003 Estimate
			1001	998
			Cost to Complete	Total Cost
			Continuing	Continuing

**A. Mission Description and Justification:** This project finances minor construction projects for U.S. Army Materiel Command major subordinate command RDTE installations and laboratories, i.e., Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; and Soldier Systems Command (SSCOM), Natick, MA. Also provides common service host support to 36 tenants located at these installations. Facilities managed include 8,996 acres of land and 6.4 million square feet of building space.

**FY 1997 Accomplishments:**

- 813 Funded minor construction projects at ARDEC, Picatinny Arsenal, NJ
- 147 Funded minor construction projects at ARL, Adelphi, MD
- 78 Funded minor construction projects at SSCOM, Natick, MA.

Total 1038

**FY 1998 Planned Program:**

- 864 Fund minor construction projects at ARDEC, Picatinny Arsenal, NJ
- 152 Fund minor construction projects at ARL, Adelphi, MD
- 82 Fund minor construction projects at SSCOM, Natick, MA.

Total 1098

**FY 1999 Planned Program:**

- 669 Fund minor construction projects at ARDEC, Picatinny Arsenal, NJ
- 290 Fund minor construction projects at ARL, Adelphi, MD
- 168 Fund minor construction projects at SSCOM, Natick, MA.

Total 1127

Project M1WW

Page 4 of 7 Pages

Exhibit R-2 (PE 0605876A)

1269

Item 135

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
6 - Management and Support		M1WW	
PE NUMBER AND TITLE		0605876A Minor Construction - Research, Development, Testing & Evaluation	
FY 1997	FY 1998	FY 1999	
1040	1133	1216	
1062	1133		
-24	-35		
1038	1098	1127	
<p><b>B. Project Change Summary</b></p> <p>FY 1998/1999 President's Budget</p> <p>Appropriated Value</p> <p>Adjustments to Appropriated Value</p> <p>FY 1999 President's Budget</p>			
Project M1WW		Exhibit R-2 (PE 0605876A)	
Page 5 of 7 Pages		Item 135	

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
6 - Management and Support	0605876A Minor Construction - Research, Development, Testing & Evaluation	M4WW		
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate
M4WW Minor Construction - Corps of Engineers		468	498	477
			FY 2000 Estimate	FY 2001 Estimate
			449	435
			FY 2002 Estimate	FY 2003 Estimate
			434	433
			Cost to Complete	Total Cost
			Continuing	Continuing
<p><b>A. Mission Description and Justification:</b> Project finances those minor construction projects for U.S. Army Corps of Engineers RDTE laboratories located at Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH; Topographic Engineering Center (TEC), Alexandria, VA and Construction Engineering Research Laboratory (CERL), Champaign, IL.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 220 Funded minor construction projects at CRREL, Hanover, NH</li> <li>• 154 Funded minor construction projects at WES, Vicksburg, MS</li> <li>• 94 Funded minor construction projects at TEC, Alexandria, VA</li> <li>• Total 468</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 103 Fund minor construction projects at TEC, Alexandria, VA</li> <li>• 213 Fund minor construction projects at CRREL, Hanover, NH</li> <li>• 169 Fund minor construction projects at WES, Vicksburg, MS</li> <li>• 13 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>• Total 498</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 103 Fund minor construction projects at TEC, Alexandria, VA</li> <li>• 205 Fund minor construction projects at CRREL, Hanover, NH</li> <li>• 169 Fund minor construction projects at WES, Vicksburg, MS</li> <li>• Total 477</li> </ul>				

Project M4WW

Page 6 of 7 Pages

Exhibit R-2 (PE 0605876A)

1271

Item 135

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605876A Minor Construction - Research, Development, Testing & Evaluation	M4WW	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		481	514
Adjustments to Appropriated Value		491	514
FY 1999 President's Budget		-23	-16
		468	498
			477
Project M4WW		Exhibit R-2 (PE 0605876A)	
Page 7 of 7 Pages		Item 135	

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1273

Item 135

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605878A Maintenance and Repair - Research, Development, Testing & Evaluation									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		66869	83751	49233	63333	69246	76659	74905	Continuing	Continuing	
M0YY Maintenance and Repair - AMC Test Ranges		51337	58484	33027	48826	52859	59646	60599	Continuing	Continuing	
M1YY Maintenance and Repair - AMC Subordinate Commands/Laboratories		12187	10896	14063	11819	13353	13613	10344	Continuing	Continuing	
M4YY Maintenance and Repair - U.S. Army Corps of Engineers		3345	4707	2143	2688	3034	3400	3962	Continuing	Continuing	
M744 Modernization of Utilities		0	9664	0	0	0	0	0	0	0	

**Mission Description and Budget Item Justification:** This program element finances activities and functions necessary for maintenance and repair of real property at U.S. Army RDTE installations, laboratories and test ranges. Maintenance and repair of real property includes applicable expenses of cyclic and preventive maintenance and annual recurring repair incurred by building trade shops, construction units, grounds and pavements units, machine shops and contracts. Funding also provide for modernization of utility systems. These projects substantially prolong the useful life of the facility, and are all actually facility investments. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605878A Maintenance and Repair - Research, Development, Testing & Evaluation								M0YY	
COST (/in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M0YY	Maintenance and Repair - AMC Test Ranges	51337	58484	33027	48826	52859	59646	60599	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> This project finances the maintenance and repair for sustaining the infrastructure of the U.S. Army Materiel Command (AMC) installations assigned to the Test and Evaluation Command (TECOM), i.e. Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; Yuma Proving Ground, AZ and White Sands Missile Range, NM. Funding provides maintenance and repair to over 24 million square feet of facilities, 3 thousand miles of road, 1400 miles of electric distribution systems, and over 600 miles of water and sewage distribution systems.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>28012 Funded minimum operational maintenance requirements and \$1.9 million for repair to U.S. Army Ordnance Center and School student training facility at Aberdeen Proving Ground, MD.</li> <li>4299 Funded minimum operational maintenance requirements at Dugway Proving Ground, UT.</li> <li>10042 Funded minimum operational maintenance requirements at White Sands Missile Range, NM.</li> <li>4984 Funded minimum operational maintenance requirements at Yuma Proving Ground, AZ.</li> <li>4000 Funded Federal Energy Management Projects (FEMP).</li> </ul> <p>Total 51337</p>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>32453 Funds sustainment costs at Aberdeen Proving Ground, MD.</li> <li>5372 Funds sustainment costs at Dugway Proving Ground, UT.</li> <li>13124 Funds sustainment costs at White Sands Missile Range, NM.</li> <li>6406 Funds sustainment costs at Yuma Proving Ground, AZ.</li> <li>1129 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 58484</p>											
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>19106 Funds sustainment costs at Aberdeen Proving Ground, MD.</li> <li>2880 Funds sustainment costs at Dugway Proving Ground, UT.</li> <li>7360 Funds sustainment costs at White Sands Missile Range, NM.</li> <li>3681 Funds sustainment costs at Yuma Proving Ground, AZ.</li> </ul> <p>Total 33027</p>											
Project M0YY											

Exhibit R-2 (PE 0605878A)

Page 2 of 8 Pages

1275

Item 136

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																						
6 - Management and Support	0605878A Maintenance and Repair - Research, Development, Testing & Evaluation		M0YY																				
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>49797</td> <td>60347</td> <td>58714</td> </tr> <tr> <td>Appropriated Value</td> <td>50862</td> <td>60347</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>+475</td> <td>-1863</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>51337</td> <td>58484</td> <td>33027</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY 1999 funds (-25687) reprogrammed to higher priority requirements.</p>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	49797	60347	58714	Appropriated Value	50862	60347		Adjustments to Appropriated Value	+475	-1863		FY 1999 President's Budget	51337	58484	33027
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	49797	60347	58714																				
Appropriated Value	50862	60347																					
Adjustments to Appropriated Value	+475	-1863																					
FY 1999 President's Budget	51337	58484	33027																				
Project M0YY		Exhibit R-2 (PE 0605878A)																					

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605878A Maintenance and Repair - Research, Development, Testing & Evaluation								M1YY	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M1YY	Maintenance and Repair - AMC Subordinate Commands/Laboratories	12187	10896	14063	11819	13353	13613	10344	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> This project finances those maintenance and repair activities and functions necessary for maintaining and repairing infrastructure for the U.S. Army Materiel Command major subordinate command RDTE installations and laboratories, i.e., Army Research Laboratory, Adelphi, Maryland; Armament Research, Development and Engineering Center, Picatinny Arsenal, Dover, New Jersey; and Soldier System Command, Natick, Massachusetts. Also provides common service host support to 36 tenants located at these installations. Facilities managed include 8,996 acres of land and 6.4 million square feet of building space with necessary utilities and road systems.</p>											
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 7206 Funded maintenance and repair projects at Picatinny Arsenal, NJ.</li> <li>• 2797 Funded maintenance and repair projects at Army Research Laboratory, Adelphi, MD.</li> <li>• 2184 Funded maintenance and repair projects at Soldier Systems Command, Natick, MA.</li> <li>Total 12187</li> </ul>											
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 6184 Funds maintenance and repair projects at Picatinny Arsenal, NJ.</li> <li>• 2946 Funds maintenance and repair projects at Army Research Laboratory, Adelphi, MD.</li> <li>• 1493 Funds maintenance and repair projects at Soldier Systems Command, Natick, MA.</li> <li>• 273 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 10896</li> </ul>											
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 7276 Funds maintenance and repair projects at Picatinny Arsenal, NJ.</li> <li>• 2585 Funds maintenance and repair projects at Army Research Laboratory, Adelphi, MD.</li> <li>• 4202 Funds maintenance and repair projects at Soldier Systems Command, Natick, MA.</li> <li>Total 14063</li> </ul>											

Exhibit R-2 (PE 0605878A)

Page 4 of 8 Pages

Item 136

Project M1YY

1277

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support		0605878A Maintenance and Repair - Research, Development, Testing & Evaluation	
B. Project Change Summary		FY 1997	FY 1998
FY 1998/1999 President's Budget		15476	11243
Appropriated Value		15807	11243
Adjustments to Appropriated Value		-3620	-347
FY 1999 President's Budget		12187	10896
			14063
Change Summary Explanation:			
Funding: FY 1997 decrease (-3289) reprogrammed to higher priority requirements.			
FY 1999 increase (+2098) to repair barracks at Soldier Systems Command, Natick, MA.			
Project M1YY		Exhibit R-2 (PE 0605878A)	

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
6 - Management and Support		0605878A Maintenance and Repair - Research, Development, Testing & Evaluation		M4YY					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M4YY Maintenance and Repair - U.S. Army Corps of Engineers	3345	4707	2143	2688	3034	3400	3962	Continuing	Continuing
<p><b>A. Mission Description and Justification:</b> This project finances those maintenance and repair activities and functions necessary for maintaining and repairing infrastructure for the U.S. Army Corps of Engineers RDTE laboratories located at Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH; Construction Engineering Research Laboratory (CERL), Champaign, IL and Topographic Engineering Center (TEC), Alexandria, VA.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 676 Funded maintenance and repair projects at CERL, Champaign, IL.</li> <li>• 1588 Funded maintenance and repair projects at CRREL, Hanover, NH.</li> <li>• 439 Funded maintenance and repair projects at TEC, Alexandria, VA.</li> <li>• 642 Funded maintenance and repair projects at WES, Vicksburg, MS.</li> <li>Total 3345</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 709 Fund maintenance and repair projects at CERL, Champaign, IL.</li> <li>• 2858 Fund maintenance and repair projects at CRREL, Hanover, NH.</li> <li>• 467 Fund maintenance and repair projects at TEC, Alexandria, VA.</li> <li>• 673 Fund maintenance and repair projects at WES, Vicksburg, MS.</li> <li>Total 4707</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 429 Fund maintenance and repair projects at CERL, Champaign, IL.</li> <li>• 1029 Fund maintenance and repair projects at CRREL, Hanover, NH.</li> <li>• 279 Fund maintenance and repair projects at TEC, Alexandria, VA.</li> <li>• 406 Fund maintenance and repair projects at WES, Vicksburg, MS.</li> <li>Total 2143</li> </ul>									

Project M4YY

Page 6 of 8 Pages

Exhibit R-2 (PE 0605878A)

1279

Item 136

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605878A Maintenance and Repair - Research, Development, Testing & Evaluation	M4YY	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		3307	3557
Adjustments to Appropriated Value		3378	4857
FY 1999 President's Budget		-33	-150
		3345	4707
			2143
<p>Change Summary Explanation:</p> <p>Funding: FY 1998 increase (+1300) is a Congressional plus-up.</p> <p>FY 1999 decrease (-1859) realigned to higher priority requirements.</p>			
Project M4YY		Exhibit R-2 (PE 0605878A)	

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605878A Maintenance and Repair - Research, Development, Testing & Evaluation								M744																					
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
M744	Modernization of Utilities	0	9664	0	0	0	0	0	0	0																					
<p><b>A. Mission Description and Justification:</b> Project M744 Modernization of Utilities. This is not a new start. It is the repair to an existing facility and system infrastructure. This project will finance the repair of the steam heat distribution system, Edgewood Area, Aberdeen Proving Ground, MD. This steam heat distribution system is 40 to 50 years old. Corrosion-related problems and other deficiencies are discharging condensate into the ground. Some areas of the system are beyond repair and must be replaced. The condensate piping is severely corroded and in extremely poor condition. Leaks and steaming are common place. Standing water exists in many manholes causing deterioration and excessive spalling and cracking, posing serious safety and environmental concerns. Boilers in the Central Plant (Vintage 1940) need to be replaced. They are inefficient, in poor shape and technically obsolete. The estimated \$9664K will repair the entire steam system.</p> <p><b>FY 1997 Accomplishments:</b> Project not funded in FY 1997.</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 9421 Repair steam heat distribution system, Edgewood Area, Aberdeen Proving Ground, MD</li> <li>• 243 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 9664</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999.</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>9972</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>9972</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>-308</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>9664</td> <td></td> </tr> </table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	9972	0	Adjustments to Appropriated Value	0	9972		FY 1999 President's Budget	0	-308	0			9664	
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	0	9972	0																												
Adjustments to Appropriated Value	0	9972																													
FY 1999 President's Budget	0	-308	0																												
		9664																													

Project M744

Page 8 of 8 Pages

Exhibit R-2 (PE 0605878A)

1281

Item 136

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605879A Real Property Services (RPS)									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	88190	86199	87172	86667	85871	88096	89970	Continuing	Continuing	
M0UU	Real Property Services - TECOM	60096	56137	58520	58112	56640	58157	59389	Continuing	Continuing	
M1UU	Real Property Services - AMC MSC/LAB	23695	25438	26399	26256	26907	27543	28142	Continuing	Continuing	
M4UU	Real Property Services - COE	4399	4624	2253	2299	2324	2396	2439	Continuing	Continuing	

**Mission Description and Budget Item Justification:** The Real Property Services program finances activities and functions necessary for operation of utilities (with the exception of communications). It includes purchase of electricity, operations of heating plants and water distribution and sewage systems. Element also finances the labor associated with real property support along with fire prevention, custodial service contracts, collection and disposal of refuse, pest control management, snow/ice and sand removal. It also supports the engineering, general management, supervision, mapping, planning, utilization inspection and other activities of a general nature performed by the Directorate for Public Works (DPW) both in-house and by contract. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

## UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605879A Real Property Services (RPS)								MOU	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
MOU	Real Property Services - TECOM	60096	56137	58520	58112	56640	58157	59389	Continuing	Continuing	
<p><b>A. Mission Description and Justification: Project MOU - Operation of Utilities &amp; Other Engineering - AMC Test Ranges:</b> This project funds the operations of utilities and other engineering services for the U.S. Army Materiel Command (AMC) installations assigned to the Test and Evaluation Command (TECOM), i.e. Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; Yuma Proving Ground, AZ and White Sands Missile Range, NM. Funding provides for the utility costs and system operation of 1400 miles of electric distribution and 600 miles of water and sewer systems. Additionally, this project provides utilities services to the TECOM test mission and over 100 tenants and satellites that reside in 24 million square feet of facilities. Another major responsibility is the removal of snow and sand, extremely important to the safety of the workforce that travel on approximately 3000 mile road systems located on the TECOM installations. This account also funds the contracts for custodial and refuse collections and civilian firefighters responsible for the safety and health of the workforce that support the varied Army missions located on these installations.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 36179 Funded operations of utilities and other engineering at Aberdeen Proving Ground, Maryland.</li> <li>• 5596 Funded operations of utilities and other engineering at Dugway Proving Ground, Utah.</li> <li>• 13949 Funded operations of utilities and other engineering at White Sands Missile Range, New Mexico.</li> <li>• 4372 Funded operations of utilities and other engineering at Yuma Proving Ground, Arizona.</li> </ul> <p>Total 60096</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 31994 Funds operation of utilities and other engineering requirements at Aberdeen Proving Ground, Maryland.</li> <li>• 5202 Funds operation of utilities and other engineering requirements at Dugway Proving Ground, Utah.</li> <li>• 13319 Funds operation of utilities and other engineering requirements at White Sands Missile Range, New Mexico.</li> <li>• 4214 Funds operation of utilities and other engineering at Yuma Proving Ground, Arizona.</li> <li>• 1408 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> </ul> <p>Total 56137</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 37674 Fund operations of utilities and other engineering at Aberdeen Proving Ground, Maryland.</li> <li>• 5941 Fund operations of utilities and other engineering at Dugway Proving Ground, Utah.</li> <li>• 11122 Fund operations of utilities and other engineering at White Sands Missile Range, New Mexico.</li> <li>• 3783 Fund operations of utilities and other engineering at Yuma Proving Ground, Arizona.</li> </ul> <p>Total 58520</p>											

Exhibit R-2 (PE 0605879A)

Page 2 of 6 Pages

1283

Item 137

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
6 - Management and Support	0605879A Real Property Services (RPS)			M0UU	
B. Project Change Summary	FY 1997	FY 1998	FY 1999		
FY 1998/1999 President's Budget	61601	57925	57715		
Appropriated Value	62918	57925			
Adjustments to Appropriated Value	-2822	-1788			
FY 1999 President's Budget	60096	56137	58520		

Project M0UU

Page 3 of 6 Pages

Exhibit R-2 (PE 0605879A)

Page 3 of 6 Pages

1284

Item 137

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																			
6 - Management and Support		0605879A Real Property Services (RPS)								M1UU																			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																			
M1UU	Real Property Services - AMC MSC/LAB	23695	25438	26399	26256	26907	27543	28142	Continuing	Continuing																			
<p><b>A. Mission Description and Justification:</b> Project M1UU - Operation of Utilities and Other Engineering - AMC MSC/LAB: Finances the operation of utilities and other engineering services for U.S. Army Materiel Command (AMC) installations and laboratories, i.e., Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ; Army Research Laboratory (ARL), Adelphi, MD; and Soldier Systems Command (SSCOM), Natick, MA.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 15588 Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.</li> <li>• 5465 Army Research Laboratory, Adelphi, MD.</li> <li>• 2642 Soldier Systems Command, Natick, MA.</li> <li>Total 23695</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 15582 Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.</li> <li>• 6462 Army Research Laboratory, Adelphi, MD.</li> <li>• 2756 Soldier Systems Command, Natick, MA.</li> <li>• 638 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 25438</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 16459 Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.</li> <li>• 7267 Army Research Laboratory, Adelphi, MD.</li> <li>• 2673 Soldier Systems Command, Natick, MA.</li> <li>Total 26399</li> </ul> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1999</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>24338</td> <td>26248</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>24858</td> <td>26248</td> </tr> <tr> <td></td> <td>-1163</td> <td>-810</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>23695</td> <td>25438</td> </tr> <tr> <td></td> <td></td> <td>26399</td> </tr> </table>												FY 1998/1999 President's Budget	FY 1999	FY 1999	Appropriated Value	24338	26248	Adjustments to Appropriated Value	24858	26248		-1163	-810	FY 1999 President's Budget	23695	25438			26399
FY 1998/1999 President's Budget	FY 1999	FY 1999																											
Appropriated Value	24338	26248																											
Adjustments to Appropriated Value	24858	26248																											
	-1163	-810																											
FY 1999 President's Budget	23695	25438																											
		26399																											

Exhibit R-2 (PE 0605879A)

Page 4 of 6 Pages

1285

Item 137

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
6 - Management and Support		0605879A Real Property Services (RPS)								M4UU			
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
M4UU	Real Property Services - COE	4399	4624	2253	2299	2324	2396	2439	Continuing	Continuing			
<p><b>A. Mission Description and Justification:</b> Project M4UU - Operation of Utilities and Other Engineering - COE; Finances the operation of utilities and other engineering services for U.S. Corps of Engineers Laboratories, i.e., Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratories (CRREL), Hanover, NH; Construction Engineering Research Laboratory (CERL), Champaign, IL; and Topographic Engineering Center (TEC), Alexandria, VA.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1080 Waterways Experiment Station, Vicksburg, MS</li> <li>1093 Cold Regions Research and Engineering Laboratories; Hanover, NH</li> <li>1098 Construction Engineering Research Laboratory, Champaign, IL</li> <li>1128 Topographic Engineering Center, Alexandria, VA</li> <li>Total 4399</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1150 Waterways Experiment Station, Vicksburg, MS</li> <li>1193 Cold Regions Research and Engineering Laboratories; Hanover, NH</li> <li>1188 Construction Engineering Research Laboratory, Champaign, IL</li> <li>977 Topographic Engineering Center, Alexandria, VA</li> <li>116 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 4624</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>563 Waterways Experiment Station, Vicksburg, MS</li> <li>563 Cold Regions Research and Engineering Laboratories; Hanover, NH</li> <li>563 Construction Engineering Research Laboratory, Champaign, IL</li> <li>564 Topographic Engineering Center, Alexandria, VA</li> <li>Total 2253</li> </ul>													

Exhibit R-2 (PE 0605879A)

Page 5 of 6 Pages

Project M4UU

1286

Item 137

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
6 - Management and Support		M4UU	
		0605879A Real Property Services (RPS)	
		PE NUMBER AND TITLE	
		FY 1997	FY 1998
		4518	4772
		4614	4772
		-215	-148
		4399	4624
			2253
B. Project Change Summary			
FY 1998/1999 President's Budget			
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget			
Change Summary Explanation: Funding: FY 1999 funds (-2707) reprogrammed for higher priority requirements.			

Project M4UU

Page 6 of 6 Pages

Exhibit R-2 (PE 0605879A)

1287

Item 137

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0605896A Base Operations - Research, Development, Testing & Evaluation									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		217667	224593	230029	227290	227972	230229	233743	Continuing	Continuing	
M0ZZ Base Operations - Army Materiel Command (AMC) Test Ranges		140168	143538	145667	145684	148194	150236	152358	Continuing	Continuing	
M1ZZ Base Operations - AMC Major Subordinate Commands and Laboratories		65631	69669	72152	69727	67954	68052	69289	Continuing	Continuing	
M4ZZ Base Operations - Corps of Engineers		11868	11386	12210	11879	11824	11941	12096	Continuing	Continuing	
<p><b>Mission Description and Budget Item Justification:</b> The Base Operations (BASEOPS) program finances those activities and functions necessary for operating and maintaining U.S. Army RDTE installations, laboratories, test ranges and a significant tenant/satellite population. BASEOPS activities and functions include: (1) operation of post supply functions; (2) direct and general maintenance activities; (3) operation and maintenance of transportation equipment and local transportation; (4) operation of laundry and dry cleaning plants and contractual services where Army-owned plants are not operated; (5) Army food service program; (6) support to military and civilian personnel; (7) operation and administration of unaccompanied personnel housing; (8) command element activities required for commanding all Army units assigned or attached to the installation; (9) automation activities; (10) reserve component support; (11) development and administration of morale, welfare and recreation facilities and activities along with quality of life initiatives for the military and their families; (12) police and security services and counterintelligence; (13) resource management operations; (14) Defense Finance and Accounting Service (DFAS); (15) contracting operations; and (16) records management and publications. This is a labor intensive program, providing salaries and related personnel benefits for authorized civilian personnel and associated administrative support functions outlined above. Funding does not include dollars required for Commercial Activities (CA) study or implementation costs resulting from current CA reviews. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.</p>											

Page 1 of 8 Pages

Exhibit R-2 (PE 0605896A)

1288

Item 138

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998						
BUDGET ACTIVITY		PROJECT							
6 - Management and Support		M0ZZ							
PE NUMBER AND TITLE		0605896A Base Operations - Research, Development, Testing & Evaluation							
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0ZZ Base Operations - Army Materiel Command (AMC) Test Ranges	140168	143538	145667	145684	148194	150236	152358	Continuing	Continuing
<p><b>A. Mission Description and Justification:</b> Finances installation management for operating and maintaining technical test ranges assigned to the U.S. Army Test and Evaluation Command (TECOM), i.e., Yuma Proving Ground, AZ; Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; and White Sands Missile Range, NM. Provides for the test infrastructure base support along with common service base support to over 100 tenants and satellites served by the four TECOM Major Range &amp; Test Facility Bases (MRTFB). Base Operations infrastructure includes fixed costs for payroll as well as personnel costs associated with downsizing and re-engineering to civilian workforce commensurate with technical testing, diverse Army R&amp;D tenants, and a principal training mission at the Ordnance Center and School. Beginning in FY 98, funding for Youth Activities, Child Development and Army Community Services, audio visual support to USA Ordnance Center &amp; School, and Civilian Illness &amp; Injury Compensation (CIIC) transferred from OMA to RDTE (\$10310K). Funds are required to: maintain minimum operating levels necessary to support the technical test mission at AMC test ranges; prevent facility failures which jeopardize the health, safety and quality of life of the military and civilian personnel that work on these installations; support new missions passed to the four TECOM RDTE installations without resources (i.e., BASOPS for an additional 1.2M square foot from BRAC consolidations and new construction; commercial activity implementation costs; Defense Mega Center fees; DFAS support; restoration of English Village; etc.) and for computer modernization to include Local Area Network Upgrades, Technology Advancements, Equipment Replacement and Productivity Enhancements.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 72781 Garrison, Aberdeen Proving Ground Support Activity, MD</li> <li>• 14887 Dugway Proving Ground, UT</li> <li>• 37083 White Sands Missile Range, NM</li> <li>• 15417 Yuma Proving Ground, AZ</li> <li>• Above funding included specific projects below:             <ul style="list-style-type: none"> <li>- Civilian Illness and Injury Compensation Costs.</li> <li>- Defense Finance and Accounting Services (previously operated by Army Installations)</li> <li>- Funded Military Police (MP) conversion to civilian police/guards</li> </ul> </li> </ul> <p>Total 140168</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 75393 Garrison, Aberdeen Proving Ground Support Activity, MD</li> <li>• 13705 Dugway Proving Ground, UT</li> </ul>									

Project M0ZZ

Page 2 of 8 Pages

Exhibit R-2 (PE 0605896A)

1289

Item 138

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>0605896A Base Operations - Research, Development, Testing &amp; Evaluation</b>	<b>M0ZZ</b>	
<p><b>FY 1998 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>• 38470 White Sands Missile Range, NM</li> <li>• 15970 Yuma Proving Ground, AZ</li> <li>• Above funding includes specific projects below: <ul style="list-style-type: none"> <li>- Civilian Illness and Injury Compensation Costs.</li> <li>- Defense Finance and Accounting Services (previously operated by Army Installations)</li> <li>- Civilian Personnel Operations Center (Regionalized Army Civilian Personnel Operations)</li> <li>- Fund transfer of Materials Technology Laboratory, Watertown, MA to Aberdeen Proving Ground, MD (BRAC Action)</li> <li>- Provides minimum funding for English Village operations at Dugway Proving Ground, UT.</li> <li>- Military Police (MP) conversion to civilian police/guards</li> <li>- Year 2000 Millennium Computer Upgrades.</li> <li>- Funds minimum essential requirements.</li> </ul> </li> </ul> <p>Total 143538</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 77252 Garrison, Aberdeen Proving Ground Support Activity, MD</li> <li>• 14101 Dugway Proving Ground, UT</li> <li>• 38694 White Sands Missile Range, NM</li> <li>• 15620 Yuma Proving Ground, AZ</li> <li>• Above funding includes specific projects below: <ul style="list-style-type: none"> <li>- Civilian Illness and Injury Compensation Costs</li> <li>- Defense Finance and Accounting Services (previously operated by Army Installations).</li> <li>- Civilian Personnel Operations Center (Regionalized Civilian Personnel Operations).</li> <li>- Fund transfer of Materials Technology Laboratory, Watertown, MA to Aberdeen Proving Ground, MD (BRAC Action)</li> <li>- Provides minimum funding for English Village operations at Dugway Proving Ground, UT.</li> <li>- Military Policy (MP) conversion to civilian police/guards</li> <li>- Managerial Accountants (50 positions) transferred from DFAS back to TECOM Installations.</li> <li>- Funds minimum essential requirements.</li> </ul> </li> </ul> <p>Total 145667</p>			
Project M0ZZ		Exhibit R-2 (PE 0605896A)	

## UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
6 - Management and Support		M0ZZ	
		0605896A Base Operations - Research, Development, Testing & Evaluation	
		PE NUMBER AND TITLE	
		FY 1997	FY 1998
		FY 1999	
B. <u>Project Change Summary</u>			
FY 1998/1999 President's Budget		145038	148043
Appropriated Value		148139	152287
Adjustments to Appropriated Value		-7971	148043
FY 1999 President's Budget		140168	-4505
			143538
			145667
Change Summary Explanation: Funding: FY 1999 decrease of (-6620) realigned to higher priority requirements.			

Project M0ZZ

Page 4 of 8 Pages

Exhibit R-2 (PE 0605896A)

1291

Item 138

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605896A Base Operations - Research, Development, Testing & Evaluation								M1ZZ	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M1ZZ	Base Operations - AMC Major Subordinate Commands and Laboratories	65631	69669	72152	69727	67954	68052	69289	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Finances installation management for operating and maintaining other U.S. Army Materiel Command RDTE installations and laboratories, i.e., Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ; and Soldier Systems Command (SSCOM), Natick, MA. Provides for the infrastructure base support along with common service base support to tenants and satellites.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 26303 ARDEC, Picatinny Arsenal, NJ</li> <li>• 26694 ARL, Adelphi, MD</li> <li>• 12634 SSCOM, Natick, MA</li> <li>Total 65631</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 34085 ARDEC, Picatinny Arsenal, NJ</li> <li>• 23074 ARL, Adelphi, MD</li> <li>• 12131 SSCOM, Natick, MA</li> <li>• 379 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 69669</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 35740 ARDEC, Picatinny Arsenal, NJ</li> <li>• 22979 ARL, Adelphi, MD</li> <li>• 13433 SSCOM, Natick, MA</li> <li>Total 72152</li> </ul> <p>NOTE: Effective FY 98, ARDEC includes OMA transfer of Youth Activities, Child Development Services, Army Community Services, Public Affairs, ADP and Base Communications to RDTE.</p>											

Project M1ZZ

Page 5 of 8 Pages

Exhibit R-2 (PE 0605896A)

1292

Item 138

## UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605896A Base Operations - Research, Development, Testing & Evaluation	M1ZZ	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		62727	71863
Adjustments to Appropriated Value		64068	71863
FY 1999 President's Budget		+1563	-2194
		65631	69669
			72152

Project M1ZZ

Page 6 of 8 Pages

Exhibit R-2 (PE 0605896A)

Item 138

1293

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605896A Base Operations - Research, Development, Testing & Evaluation								M4ZZ	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M4ZZ	Base Operations - Corps of Engineers	11868	11386	12210	11879	11824	11941	12096	Continuing	Continuing	
<p><b>A. Mission Description and Justification:</b> Finances BASEOPS activities and functions necessary for operating and maintaining the following U.S. Army Corps of Engineers RDTE laboratories: Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratories (CRREL), Hanover, NH; Construction Engineering Research Laboratory (CERL), Champaign, IL; and Topographic Engineering Center (TEC), Alexandria, VA.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2937 CERL, Champaign, IL</li> <li>• 2973 CRREL, Hanover, NH</li> <li>• 3044 TEC, Alexandria, VA</li> <li>• 2914 WES, Vicksburg, MS</li> <li>Total 11868</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 2925 CERL, Champaign, IL</li> <li>• 2937 CRREL, Hanover, NH</li> <li>• 2418 TEC, Alexandria, VA</li> <li>• 2831 WES, Vicksburg, MS</li> <li>• 275 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.</li> <li>Total 11386</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 3195 CERL, Champaign, IL</li> <li>• 3208 CRREL, Hanover, NH</li> <li>• 2714 TEC, Alexandria, VA</li> <li>• 3093 WES, Vicksburg, MS</li> <li>Total 12210</li> </ul>											

Project M4ZZ.

Page 7 of 8 Pages

Exhibit R-2 (PE 0605896A)

1294

Item 138

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605896A Base Operations - Research, Development, Testing & Evaluation	M4ZZ	
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1998	FY 1999
Appropriated Value		11747	10035
Adjustments to Appropriated Value		11747	
FY 1999 President's Budget		-361	
		11386	12210
Change Summary Explanation: Funding: FY 1999 increase (+2175) required for additional requirements.			

Project M4ZZ

Page 8 of 8 Pages

Exhibit R-2 (PE 0605896A)

1295

Item 138

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
0605898A Management Headquarters (Research and Development)										
6 - Management and Support										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	18035	25039	4683	4996	5003	4986	5002	Continuing	Continuing	
MM65 Army Research Laboratory	4690	4687	4683	4996	5003	4986	5002	Continuing	Continuing	
M831 AKAMAI	13345	20352	0	0	0	0	0	0	0	

**Mission Description and Budget Item Justification:** This program funds the Research, Development, Test and Evaluation (RDTE) Army Management Headquarters Activities (AMHA) for the U.S. Army Research Laboratory (ARL), Adelphi, MD. This program provides for (1) the development of policy and guidance, (2) long-range planning, (3) programming and budgeting, (4) management of resources (manpower and dollars), and (5) review and evaluation of program performance. Provides salaries and related personnel benefits for authorized civilian personnel and the associated administrative support (travel, supplies and equipment). Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

Page 1 of 3 Pages

Exhibit R-2 (PE 0605898A)

1296

Item 139

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
6 - Management and Support		0605898A Management Headquarters (Research and Development)								MM65																					
			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
MM65	Army Research Laboratory	COST (in Thousands)	4690	4687	4683	4996	5003	4986	5002	Continuing	Continuing																				
<p><b>A. Mission Description and Justification:</b> This project provides the funding for management headquarters activities at the U.S. Army Research Laboratory (ARL), Adelphi, MD, to (1) develop RDTE program policy and guidance; (2) perform long range planning, programming and budgeting; (3) provide for the management of resources; and (4) conduct program performance review and evaluation. This project provides for the salaries and related personnel benefits for the authorized civilian personnel and the administrative support (temporary duty travel, operating supplies and equipment).</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>4690 Funded the operation of ARL headquarters activities which administers the Army laboratory research and development program to sustain technological superiority.</li> </ul> <p>Total 4690</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>4687 Funds the operation of ARL headquarters activities which administers the Army laboratory research and development program to sustain technological superiority.</li> </ul> <p>Total 4687</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>4683 Funds the operation of ARL headquarters activities which administers the Army laboratory research and development program to sustain technological superiority.</li> </ul> <p>Total 4683</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>4700</td> <td>4837</td> <td>4765</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>4801</td> <td>4837</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-111</td> <td>-150</td> <td></td> </tr> <tr> <td></td> <td>4690</td> <td>4687</td> <td>4683</td> </tr> </table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	4700	4837	4765	Adjustments to Appropriated Value	4801	4837		FY 1999 President's Budget	-111	-150			4690	4687	4683
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	4700	4837	4765																												
Adjustments to Appropriated Value	4801	4837																													
FY 1999 President's Budget	-111	-150																													
	4690	4687	4683																												

Project MM65

Page 2 of 3 Pages

Exhibit R-2 (PE 0605898A)

1297

Item 139

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998		PROJECT																								
BUDGET ACTIVITY		PE NUMBER AND TITLE		0605898A Management Headquarters (Research and Development)		M831																								
6 - Management and Support																														
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
M831	AKAMAI	13345	20352	0	0	0	0	0	0	0																				
<p><b>A. Mission Description and Justification:</b> This is a state-of-the-art tele-imaging advanced development effort to implement the medical diagnostic imaging support (MDIS) system at Tripler Army Medical Center, HI, for tele-imaging throughout the Pacific Rim and to further the proliferation of clinically effective time and distance independent medicine techniques through the use of state-of-the-art telecommunications.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>13345 Expanded number of spokes and continued hub infrastructure development.</li> <li>Total 13345</li> </ul> <p><b>FY 1998 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>4000 Evaluate telemedicine impact on health care delivery and military readiness.</li> <li>8942 Conduct telemedicine and digital imaging trials throughout Pacific region.</li> <li>6900 Investigate clinically relevant applications of emerging telemedicine related products technologies and services.</li> <li>510 Small Business Innovative Research/Small Business Technology Transfer Programs.</li> <li>Total 20352</li> </ul> <p><b>FY 1999 Planned Program:</b> Project is not funded in FY 1999.</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>13707</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>14000</td> <td>21000</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-655</td> <td>-648</td> <td></td> </tr> <tr> <td></td> <td>13345</td> <td>20352</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1998 increase (+2100) is a Congressional plus-up.</p>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	13707	0	0	Adjustments to Appropriated Value	14000	21000		FY 1999 President's Budget	-655	-648			13345	20352	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	13707	0	0																											
Adjustments to Appropriated Value	14000	21000																												
FY 1999 President's Budget	-655	-648																												
	13345	20352	0																											

Project M831

Page 3 of 3 Pages

Exhibit R-2 (PE 0605898A)

1298

Item 139

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

1299

Item 139

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0102419A Aerostat Joint Program								DE55	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE55	JLENS	25680	33011	103937	129095	123044	0	0	85100	499867	
<p><b>A. Mission Description and Budget Item Justification:</b> The Under Secretary of Defense (Acquisition and Technology) and the Army Acquisition Executive (AAE) directed the establishment of the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) Project Office (PO), formerly Aerostat, for Land Attack Cruise Missile Defense (LACMD) and directed the funding for FY 96-01. This is a multiservice effort with the Army as the lead service. The JLENS PO is assigned to the AAE with operational control assigned to the U. S. Army Space and Missile Defense Command. The program mission is to maximize the battle space of land, sea and air based missile systems by providing Over-the-Horizon (OTH) surveillance and precision track for broad area defense against land attack cruise missiles. JLENS is a theater based system employing advanced technologies with specific focus on LACMD. JLENS sensors provide the OTH surveillance/precision tracking for the Air Directed Surface to Air Missile (ADSAM) concept. The role of the JLENS is to expand the battlefield Commander's surveillance and engagement capability against cruise missiles and other targets by extending the battle space for systems such as Patriot, Medium Extended Air Defense System (MEADS)/Corps SAM, Aegis and Advanced Medium Range Air-to-Air Missile (AMRAAM). This project supports upgrades to surveillance and tracking systems.</p> <p><b>Acquisition Strategy:</b> The JLENS PO executed a successful Concept Studies Phase by soliciting Cruise Missile Defense (CMD) architecture concepts that employ elevated sensors. The JLENS PO through a formal selection process has selected Hughes &amp; Raytheon (H&amp;R), a joint venture of Hughes Aircraft Company and the Raytheon Company (now Raytheon Systems Co), as the prime contractor for the JLENS Demonstration Program. The contract structure requires the contractor to perform risk mitigation on state of the art hardware and conduct system design activities leading to a critical design review (CDR) during segment one of the contract. Upon a successful CDR, segment 2 (Option one) will provide for the development, test, and demonstration of an operational prototype sensor system. Technology developed by DARPA and Other Government Agencies (OGAs) is being leveraged to mitigate technical risk areas. Testbed and modeling/simulation activities support the risk mitigation effort. The operational prototype JLENS system will be fully demonstrated together with Patriot PAC-3 and Standard Missile 2 (SM 2) Cooperative Engagement Capability (CEC) in counter LACMD ADSAM live fire engagements. The prototype system is intended to be provided to a Commander-in-Chief (CINC) for contingency missions beginning in FY02.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>8265 Completed Concept Definition; continued modeling and simulation analysis.</li> <li>1012 Conducted Tests and Evaluation (Testbed)</li> <li>3447 Joint Project Office.</li> <li>12956 Continued Risk reduction program, vulnerability, weatherability &amp; survivability, simulation analysis &amp; experiments. Issued prime RFP and conducted Source Selection Evaluation Board..</li> </ul> <p>Total 25680</p>											
Project DE55		Exhibit R-2 (PE 0102419A)								Item 140	

Page 1 of 5 Pages

1300

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational System Development</b>	<b>0102419A Aerostat Joint Program</b>	<b>DE55</b>	
<b>FY 1998 Planned Program:</b>			
• 23003 Award Risk Mitigation & Design Contract and support contracts.			
• 3730 Maintain Test Bed Facility; Conduct Joint demonstrations and exercises using Cooperative Engagement Capability (CEC), Joint Tactical Information Distribution System (JTIDS), and continue vulnerability and survivability analysis/experiments.			
• 1900 CEC Development/Integration			
• 500 SM-2 Development/Integration			
• 3050 JLENS Project Office.			
• 828 Small Business Innovative Research/Small Business Technology Transfer Programs.			
Total	33011		
<b>FY 1999 Planned Program:</b>			
• 77773 Complete Risk Mitigation & Design contract phase; begin Development/Test/Demo Option; other support contracts.			
• 9730 Maintain Test Bed Facilities, Conduct Joint demonstrations and exercises using Cooperative Engagement Capability (CEC), Joint Tactical Information Distribution System (JTIDS), and continue vulnerability and survivability analysis/experiments.			
• 5690 Continue CEC Development/Integration.			
• 4044 Continue SM-2 Development/Integration.			
• 3600 Purchase Government Furnished Equipment (GFE)			
• 3100 JLENS Project Office.			
Total	103937		
<b>B. Project Change Summary</b>			
FY 1998/1999 President's Budget		FY 1998	FY 1999
Appropriated Value		86193	134298
Adjustments to Appropriated Value		35000	
FY 1999 President's Budget		-1260	
		25680	103937
Change Summary Explanation:			
Funding: FY 97 - Reprogrammed to higher priority requirements (-1260)			
Funding: FY 98 - Undistributed Congressional reductions were (-1989).			
FY 99 - Funds realigned (-30000) to higher priority requirements			
<b>C. Other Program Funding Summary:</b> Not applicable			
Project DE55		Exhibit R-2 (PE 0102419A)	

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0102419A Aerostat Joint Program								DE55	
<u>D. Schedule Profile</u>		FY 1997		FY 1998		FY 1999					
		1	2	3	4	1	2	3	4		
	X	X	X	X	X*						
Concept Definition Phase											
Risk Mitigation/Design **						X	X	X			
Preliminary Design Review (PDR)											
Critical Design Review (CDR)											
Development/Test/Demo **											
Test Bed/Risk Mitigation **		X*	X*	X*	X*	X	X	X	X	X	
<p>* Denotes completed milestone.</p> <p>** Efforts are/will be on going. Will be denoted by an asterisk when completed.</p>											
Project DE55		Page 3 of 5 Pages								Exhibit R-2 (PE 0102419A)	

Item 140

1302

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE	PROJECT			
7 - Operational System Development						February 1998			
PE NUMBER AND TITLE					PROJECT				
0102419A Aerostat Joint Program					DE55				
A. Project Cost Breakdown									
Product Development & Risk Mitigation									
Government Test Facility									
Government Furnished Equipment (GFE)									
Program Management									
Total									
	FY 1997	FY 1998	FY 1999						
	21221	28961	96237						
	1012	1000	1000						
	0	0	3600						
	3447	3050	3100						
	25680	33011	103937						
B. Budget Acquisition History and Planning Information									
Performing Organizations									
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999

Project DE55

Page 4 of 5 Pages

Exhibit R-3 (PE 0102419A)

1303

Item 140

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE		
7 - Operational System Development				0102419A Aerostat Joint Program		
Government Furnished Property:				DE55		
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total		Total Program
				Prior to FY 1997	FY 1997	
Product Development Property						
CEC Identifier	TBD	TBD	TBD	0	0	12350
Friend or Foe, Enhanced Position Location Reporting System, AN/ARC-210 (airborne radio system), Mobile Subscriber Equip components, etc.						
Test and Evaluation Property: None						
Subtotal Product Development				4000	24668	494255
Subtotal Support and Management					102937	330639
Subtotal Test and Evaluation					1000	9612
Total Project				4000	103937	503867

Exhibit R-3 (PE 0102419A)

Page 5 of 5 Pages

Project DE55

Item 140

1304

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1305

Item 140

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
February 1998										
BUDGET ACTIVITY										
7 - Operational System Development										
PE NUMBER AND TITLE										
0203726A Advanced Field Artillery Tactical Data System										
System										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	37507	37455	35111	25814	16907	13756	10887	0	563695	
D322 AFATDS Development	32856	33164	31103	24075	16608	13756	10887	0	545460	
D2ET AFATDS Operational Test	4651	4291	4008	1739	299	0	0	0	18235	

**A. Mission Description and Budget Item Justification:** The Advanced Field Artillery Tactical Data System (AFATDS) will broaden and modernize the US Army fire support command, control and communications (C3) system. As a battle management system, AFATDS will provide automated fire support in the Army Battle Command System (ABCS) architecture in support of close, rear and deep operations, fire planning and the coordination and employment of all service/combined fire support assets to complement the commander's scheme of maneuver. AFATDS will accomplish this by providing fully automated support for planning, coordination and control of all fire support assets (mortars, close air support, naval gunfire, attack helicopters, offensive electronic warfare, field artillery cannons, rockets and guided missiles) in the execution of close support, counterfire, interdiction, suppression of enemy air defense and deep operations. AFATDS will automatically implement detailed commander's guidance in the automation of operational planning, movement control, targeting, target value analysis and fire support planning. These projects support development of a replacement system for the Initial Fire Support Automated System (IFSAS) and are appropriately funded in Budget Activity 7.

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
7 - Operational System Development		0203726A Advanced Field Artillery Tactical Data System								D322		
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
D322	AFATDS Development	32856	33164	31103	24075	16608	13756	10887	0	545460		

**A. Mission Description and Justification: Project D322 - AFATDS Development:** The project is composed of a common suite of hardware Army Tactical Command and Control System (ATCCS) Common Hardware/Software (CHS) employed in varying configurations at different operational facilities (or nodes) and unique system software interconnected by tactical communications in the form of a software-driven, automated network. Both hardware and software will be capable of being tailored to perform the fire support command, control and coordination requirements at any level of command. This will permit variable command and control relationships and full fire support functionality at all echelons of field artillery and maneuver, from corps to battery or company in support of all levels of conflict. The Marine Corps will also utilize AFATDS. AFATDS will interoperate with Navy and Air Force Command and Control weapon systems as well as the German fire support system (ADLER), the French fire support system (ATLAS) and British fire support system (BATES).

**Acquisition Strategy:** AFATDS software will be developed in incremental releases. AFATDS '96, previously named Version 1, received Materiel Release 13 Dec 96. It automates 51% of the required tasks including fire support planning, target nomination, order of fire, and meteorological/survey operations. AFATDS Releases '97, '98 and '99, previously identified as Version 2, will add additional functions, providing automated capabilities for the required tasks including fire support sensor planning and additional munitions. Completion of AFATDS '00, previously identified as Version 3, will result in automation of all the required tasks to meet the objective system, including full fire support planning, target acquisition support and field artillery mission support. Additionally, the completed software will utilize the Joint Common Operating Environment (JCOE) and the Army Technical Architecture. AFATDS will also provide prototype software to support the Division XXI and Army Warfighter Experiments through FY03.

**FY 1997 Accomplishments:**

- 16752 Completed AFATDS '97 and Support Testing
- 800 Prepared for AFATDS '97 Operational Testing
- 11979 Continued AFATDS '98 software development
- 3325 Initiated AFATDS '99 software development
- Total 32856

Project D322

Page 2 of 9 Pages

Exhibit R-2 (PE 0203726A)

1307

Item 141

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203726A Advanced Field Artillery Tactical Data

D322

## System

## FY 1998 Planned Program:

- 23198 Complete AFATDS '98 and Support Testing
- 800 Prepare for AFATDS '98 Operational Testing
- 8350 Continue AFATDS '99 software development
- 816 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 33164

## FY 1999 Planned Program:

- 4323 Support AFATDS '98 Operational Test and Materiel Release
- 18750 Continue AFATDS '99 software development
- 800 Prepare for AFATDS '99 Operational Test
- 7230 Initiate AFATDS '00 software development
- Total 31103

## B. Project Change Summary

FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
33735	34354	30951						
34564	34354							
-1708	-1190							
32856	33164	31103						

## C. Other Program Funding Summary

OPA - B28600  
Spares (BA9708/MA9708/BS9708)

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
36845	32270	36671	37733	41589	41685	40130	144495	479756
2077	1970	3343	2762	2725	2911	2623	8580	28251

Project D322

Page 3 of 9 Pages

Exhibit R-2 (PE 0203726A)

1308

Item 141

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998	
BUDGET ACTIVITY		PROJECT			
7 - Operational System Development		D322			
		0203726A Advanced Field Artillery Tactical Data System			
		System			
<b>D. Schedule Profile</b>					
TFXXI NTC Participation	1	FY 1997	FY 1998	FY 1999	
Division XXI AWE Participation		2	2	2	3
AFATDS '97 Limited User Test		X*	3	4	4
Release AFATDS '97					
AFATDS '98 Limited User Test			X		
Release AFATDS '98				X	X
*Milestone Complete					

Project D322

Page 4 of 9 Pages

Exhibit R-2 (PE 0203726A)

1309

Item 141

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
7 - Operational System Development		0203726A Advanced Field Artillery Tactical Data System		D322		
		FY 1997	FY 1998	FY 1999		
<b>A. Project Cost Breakdown</b>						
Software Development		27558	27977	27531		
Support Contracts		1466	1055	1078		
In-House Support		1312	1315	1336		
GFE		2420	2001	1158		
Test and Evaluation		100				
SBIR/STTR			816			
Total		32856	33164	31103		
<b>B. Budget Acquisition History and Planning Information</b>						
<b>Performing Organizations</b>						
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	
Activity				EAC	FY 1997	FY 1998
<b>Product Development Organizations</b>						
HDC (prev. MX)	SS/CPAF	27 Apr 90	276045	276045	148561	24632
Various, MX BOA		FY 87	34891	34891	34891	0
STRICOM/FSATS	MIPR		12092	12092	12092	0
COE/ATCCS	MIPR		15461	15461	7060	2036
SED	MIPR		8814	8814	4375	890
NRAD			244	244	244	0
(USMC/NAVY)						
ADCCS	MIPR	FY95	2200	2200	2200	0
<b>Support and Management Organizations</b>						
CSC/ARC	C/CPFF	Dec 92	12963	12963	8522	966
PROGRAM						729
MANAGEMENT:						
PM FATDS					18083	581
MATRIX					14826	734
Misc. Contracts						588
						748
						1674
						2174
						21525
						19195
Project D322		Page 5 of 9 Pages		Exhibit R-3 (PE 0203726A)		

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
7 - Operational System Development										0203726A Advanced Field Artillery Tactical Data		
System										D322		
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
CECOM			EAC	EAC	71217	500	326	334	820	73197		
SBIR/STTR							816		0	816		
Test and Evaluation Organizations												
OPTEC					6081	0	0	0	0	6081		
MISC. (Ft. Hood)	MIPR				3355	100	0	0	0	3455		
Government Furnished Property												
Item Description		Award or Obligation Date	Delivery Date		Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Product Development Property												
LCU, TCU, PSE	C/FFP				33476	2420	2001	1158	2201	41256		
Support and Management Property: None												
Test and Evaluation Property												
TEST HARDWARE					18041	0	0	0	0	18041		
Subtotal Product Development					242899	29978	29978	28689	59459	391003		
Subtotal Support and Management					112648	2778	3186	2414	5854	126880		
Subtotal Test and Evaluation					27477	100				27577		
Total Project					383024	32856	33164	31103	65313	545460		
Project D322												
Page 6 of 9 Pages												
Exhibit R-3 (PE 0203726A)												
Item 141												

Project D322

Page 6 of 9 Pages

Exhibit R-3 (PE 0203726A)

1311

Item 141

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational System Development			0203726A Advanced Field Artillery Tactical Data System							D2ET		

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

0203726A Advanced Field Artillery Tactical Data

D2ET

FY 1999

3988

4685

-394

4008

FY 1998

2 3

X

Page 8 of 9 Pages

Exhibit R-2 (PE 0203726A)

Item 141

**UNCLASSIFIED**

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0203726A Advanced Field Artillery Tactical Data System	D2ET	
<b>A. Project Cost Breakdown</b>			
Operational Test and Evaluation	FY 1997 4651	FY 1998 4291	FY 1999 4008
Total	4651	4291	4008
<b>B. Budget Acquisition History and Planning Information:</b>			
<b>Performing Organizations</b>			
Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity
Activity			
<b>Product Development Organizations:</b> None			
<b>Support and Management Organizations:</b> None			
<b>Test and Evaluation Organizations</b>			
OPTEC			
<b>Government Furnished Property:</b> None			
Subtotal Product Development			
Subtotal Support and Management			
Subtotal Test and Evaluation			
Total Project			

**UNCLASSIFIED**



**THIS PAGE INTENTIONALLY LEFT BLANK**

1315

Item 141

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		203653	161497	94756	28439	4983	26112	110601	Continuing	Continuing	
D280 Recovery Vehicle Improvement Program		3170	0	0	0	0	0	0	0	53926	
D2TT Bradley A3 IOTE		1960	5286	2923	0	0	0	0	0	10885	
D2UT Abrams IOTE		97	0	0	0	0	0	0	0	97	
D330 Abrams Tank Improvement Program		69187	38559	6421	2982	3973	9923	34805	Continuing	Continuing	
D344 Fire Support Team Vehicle Integration		17442	9614	10974	4106	0	0	0	0	78102	
D365 Bradley Linebacker		0	3877	0	0	0	0	0	0	0	
D371 Bradley Base Sustainment Program		85435	69287	67989	2312	0	0	0	0	480380	
D377 Bradley A3 P3I (BFV A4)		0	0	0	0	0	15185	74793	Continuing	Continuing	
D718 Ground Combat Vehicle HTI		11343	17452	2012	16039	1010	1004	1003	0	49863	
DC64 DC64		15019	17422	4437	3000	0	0	0	0	40495	

**Mission Description and Budget Item Justification:** This Program Element (PE) responds to vehicle deficiencies identified during Desert Storm, continues technical system upgrades, and addresses needed evolutionary enhancements to tracked combat (Abrams, Bradley) and tactical (Recovery Vehicle, Bradley FIST) vehicles. This PE provides combat effectiveness enhancements for the Abrams Tank through a series of product improvements to the current M1A2 production vehicles. Additional improvements allow the M1A2 SEP tank to operate effectively with the M2A3 Bradley. This PE also addresses future product improvements to the M2A3. These projects support development of upgrades to current production vehicles and are appropriate to Budget Activity 7.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																																																																	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																																																																		
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D280																																																																																		
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																																																																		
D280	Recovery Vehicle Improvement Program	3170	0	0	0	0	0	0	0	53926																																																																																		
<p><b>A. Mission Description and Justification:</b> The M88A2 Heavy Recovery Vehicle (HRV), also known as the HERCULES, is an armored, full-tracked, diesel-powered recovery vehicle configured with an A-frame boom, three winches, and a spade. The HERCULES has a 1050 HP engine, an improved transmission to handle the additional towing capability, and hydraulic assisted brakes. The boom has a 35 ton lift capacity. The main winch has a constant pull capability of 70 tons. There is an additional 3 ton auxiliary winch which is used to deploy the main winch. The hull is armored for protection against small arms fire, artillery fragments, and anti-personnel mines. The vehicle has a caliber .50 machine gun mounted for self-protection. The M88A2 HRV is capable of performing recovery, evacuation, and limited repair of the main battle tank. The HERCULES migrated from the Engineering, Manufacturing and Development Phase with Low Rate Initial Production (LRIP) to Full Rate Production (FRP), with a Milestone III decision on 21 August 1997.</p> <p><b>Acquisition Strategy:</b> All development and production contract actions are on a sole source basis to United Defense Limited Partnership.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 3157 Traction Evaluation, Design and Test</li> <li>• 13 Program Management</li> </ul> <p>Total 3170</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 98</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 99</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>Total</td> </tr> <tr> <td>Appropriated Value</td> <td>3051</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>3051</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>3116</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>3116</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>54</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>54</td> </tr> <tr> <td></td> <td>3170</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>3170</td> </tr> </table> <p><b>C. Other Program Funding Summary</b></p> <table border="0"> <tr> <td></td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>To</td> </tr> <tr> <td>GA0570 Improved Recovery Vehicle (M88 Mod)</td> <td>55529</td> <td>31922</td> <td>38175</td> <td>57350</td> <td>58159</td> <td>77772</td> <td>101794</td> <td>Compl</td> </tr> <tr> <td>GE0171 Spares (Initial) M88A2</td> <td>2011</td> <td>815</td> <td>2941</td> <td>3154</td> <td>3114</td> <td>4180</td> <td>4152</td> <td>Con't</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Con't</td> </tr> </table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total	Appropriated Value	3051	0	0	0	0	0	0	3051	Adjustments to Appropriated Value	3116	0	0	0	0	0	0	3116	FY 1999 President's Budget	54	0	0	0	0	0	0	54		3170	0	0	0	0	0	0	3170		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	GA0570 Improved Recovery Vehicle (M88 Mod)	55529	31922	38175	57350	58159	77772	101794	Compl	GE0171 Spares (Initial) M88A2	2011	815	2941	3154	3114	4180	4152	Con't									Con't
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total																																																																																				
Appropriated Value	3051	0	0	0	0	0	0	3051																																																																																				
Adjustments to Appropriated Value	3116	0	0	0	0	0	0	3116																																																																																				
FY 1999 President's Budget	54	0	0	0	0	0	0	54																																																																																				
	3170	0	0	0	0	0	0	3170																																																																																				
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To																																																																																				
GA0570 Improved Recovery Vehicle (M88 Mod)	55529	31922	38175	57350	58159	77772	101794	Compl																																																																																				
GE0171 Spares (Initial) M88A2	2011	815	2941	3154	3114	4180	4152	Con't																																																																																				
								Con't																																																																																				

Project D280

Page 2 of 25 Pages

Exhibit R-2 (PE 0203735A)

1317

Item 142

UNCLASSIFIED

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					
BUDGET ACTIVITY	PE NUMBER AND TITLE				DATE
	0203735A Combat Vehicle Improvement Programs				February 1998
					PROJECT D280
<b>D. Schedule Profile</b>	FY 1997	FY 1998	FY 1999		
	1	2	3	4	
End IOT&E	X*				
Begin Traction Evaluation					
Milestone III Decision					
First Unit Equipped (FUE)					
Complete Traction Evaluation					
* Milestone Completed					

Item 142

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs			D280
<b>A. Project Cost Breakdown</b>		FY 1997	FY 1998	FY 1999	
Traction Evaluation, Design and Test		3157			
Program Management		13			
Total		3170	0	0	
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or	Contract				
Government	Method/Type				
Performing	or Funding				
Activity	Vehicle				
	Date				
<b>Product Development Organizations</b>					
United Defense	SS-CPFF				
York, PA	Various				
TACOM					
Warren, MI					
Other					
<b>Support and Management Organizations</b>					
PMO/TACOM					
Warren, MI					
Other Government					
Agencies					
<b>Test and Evaluation Organizations</b>					
TECOM/ATC-					
APG, MD					
TACOM					
Warren, MI					
Other					
<b>Government Furnished Property: None</b>					
Subtotal Product Development		41861	1641		43502
Subtotal Support and Management		1800	13		1813
Subtotal Test and Evaluation		7095	1516		8611
Total Project		50756	3170		53926
Project D280		Page 4 of 25 Pages			Exhibit R-3 (PE 0203735A)

Project D280

Page 4 of 25 Pages

Exhibit R-3 (PE 0203735A)

1319

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																																								
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																																									
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D2TT																																																									
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																																									
D2TT	Bradley A3 IOTE	1960	5286	2923	0	0	0	0	0	10885																																																									
<p><b>A. Mission Description and Justification:</b> This project provides for the initial operational test and evaluation (IOTE) of Bradley A3 prototypes and pre-production vehicles in order to generate a system performance profile in support of a Milestone III decision. Critical areas for test include command and control, lethality, survivability, mobility, and sustainability.</p> <p><b>Acquisition Strategy:</b> Not Applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"><li>• 1960 Testing Support</li></ul> <p>Total 1960</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"><li>• 5154 Testing Support</li><li>• 132 Small Business Innovative Research/Small Business Technology Transfer Programs</li></ul> <p>Total 5286</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"><li>• 2923 Testing Support [Initial Operational Test and Evaluation (IOTE)]</li></ul> <p>Total 2923</p> <p><b>B. Project Change Summary</b></p> <table><tr><td>FY 1998/1999 President's Budget</td><td>FY 1997</td><td>FY 1998</td><td>FY 1999</td><td>FY 2000</td><td>FY 2001</td><td>FY 2002</td><td>FY 2003</td><td>Total</td></tr><tr><td>Appropriated Value</td><td>2079</td><td>5771</td><td>5771</td><td>3154</td><td></td><td></td><td></td><td></td></tr><tr><td>Adjustments to Appropriated Value</td><td>-119</td><td>-485</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>FY 1999 President's Budget</td><td>1960</td><td>5286</td><td>2923</td><td></td><td></td><td></td><td></td><td></td></tr></table> <p><b>C. Other Program Funding Summary</b></p> <table><tr><td></td><td>FY 1997</td><td>FY 1998</td><td>FY 1999</td><td>FY 2000</td><td>FY 2001</td><td>FY 2002</td><td>FY 2003</td><td>To</td><td>Total</td></tr><tr><td>Bradley Base Sustainment (G80717)</td><td>175878</td><td>115878</td><td>272564</td><td>352580</td><td>424460</td><td>429368</td><td>358820</td><td>Compl Cont'd</td><td>Cost Cont'd</td></tr></table>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total	Appropriated Value	2079	5771	5771	3154					Adjustments to Appropriated Value	-119	-485							FY 1999 President's Budget	1960	5286	2923							FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total	Bradley Base Sustainment (G80717)	175878	115878	272564	352580	424460	429368	358820	Compl Cont'd	Cost Cont'd
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total																																																											
Appropriated Value	2079	5771	5771	3154																																																															
Adjustments to Appropriated Value	-119	-485																																																																	
FY 1999 President's Budget	1960	5286	2923																																																																
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total																																																										
Bradley Base Sustainment (G80717)	175878	115878	272564	352580	424460	429368	358820	Compl Cont'd	Cost Cont'd																																																										
Project D2TT										Exhibit R-2 (PE 0203735A)																																																									
Page 5 of 25 Pages																																																																			

Page 5 of 25 Pages

1320

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D2TT			
D. Schedule Profile		FY 1997				FY 1998				FY 1999			
		1	2	3	4	1	2	3	4	1	2	3	4
LUT 1													
LUT 2													
IOTE													
*Milestone Completed													

Project D2TT

Page 6 of 25 Pages

Exhibit R-2 (PE 0203735A)

1321

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998															
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D2UT																
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																
D2UT	Abrams IOTE	97	0	0	0	0	0	0	0	97																
<p><b>A. Mission Description and Justification:</b> This project originally supported the participation of 4 M1A2 SEP tanks (See Project D330) in a combined arms war game designed to demonstrate the operational effectiveness of the first fully digital version of the Bradley Infantry Fighting Vehicle. This project is commonly referred to as the M2A3 Initial Operational Test and Evaluation (IOT&amp;E).</p> <p><b>Acquisition Strategy:</b> Not Applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>97 Testing Support</li> <li>Total 97</li> </ul> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>1415</td> <td>0</td> <td>0</td> </tr> <tr> <td>1460</td> <td></td> <td></td> </tr> <tr> <td>-1363</td> <td></td> <td></td> </tr> <tr> <td>97</td> <td>0</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1997 decrease due to undistributed congressional reductions/rescission (-83), and reprogramming to Project D330 (-1280)</p> <p><b>C. Other Program Funding Summary:</b> Not Applicable</p> <p><b>D. Schedule Profile:</b> Not Applicable</p>												FY 1997	FY 1998	FY 1999	1415	0	0	1460			-1363			97	0	0
FY 1997	FY 1998	FY 1999																								
1415	0	0																								
1460																										
-1363																										
97	0	0																								

Project D2UT

Page 7 of 25 Pages

Exhibit R-2 (PE 0203735A)

1322

Item 142

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D330	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D330	Abrams Tank Improvement Program	69187	38559	6421	2982	3973	9923	34805	Continuing	Continuing	

**A. Mission Description and Justification:** This project funds improvements to the Abrams Main Battle Tank (M1 series) which began production in 1979. Its mission is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The current production model, the M1A2, is the Army's first fully digital ground combat system. The first Army unit was equipped with M1A2 tanks in October 1995.

The M1A2 System Enhancement Program (SEP) is the name given to the latest group or "block" of improvements funded under this project. SEP is an upgrade to the computer core that is the essence of the M1A2. It provides better microprocessors, color flat panel displays, more memory capacity, better Soldier-Machine Interface (SMI), and a new open operating system. An Under Armor Auxiliary Power Unit (UAAPU) is being developed for production in order to mitigate power demands on the batteries so that all systems may operate without turning on the main engine. A new thermal management system will dissipate the heat generated by the electronic components. The M1A2's formidable target acquisition capabilities will also be significantly enhanced with the development for production of the 2nd Generation Forward Looking Infra-Red (2nd Gen FLIR) technology. Both the Gunner's Primary Sight (GPS) and the Commander's Independent Thermal Viewer (CITV) will be modified to integrate the improved thermal imaging capabilities of the new FLIR technology.

The first M1A2 SEP tank is scheduled for production at the end of FY1999. The M1A2 SEP tank will be capable of running the Army's Common Operating Environment (ACOE) software for digital communication with the rest of the combined arms team. Its computer systems will also accommodate future growth without significant hardware changes. The Army plans to develop and incorporate a series of target acquisition, fire control, and survivability enhancements which will bridge the gap between the Abrams Main Battle Tank (M1A2 SEP) and the Future Combat System (PE 0603645A, Project DQ19).

**Acquisition Strategy:** General Dynamics Land Systems Division (GDLS) is the prime contractor for this development program. Texas Instruments, Inc. is the principal contractor developing the FLIR sights, which the Government will provide to General Dynamics. The cost plus fixed fee contract with General Dynamics was awarded on 14 September 1994.

**FY 1997 Accomplishments:**

- 63595 Continued development, prototype fabrication and completed component testing; Evaluated M1A2 compatibility with ACOE and continued Command and Control (C2) integration efforts
- 1737 Began contractor component testing and system test planning
- 3855 Provided Government Support/GFE

Total 69187

Project D330

Page 8 of 25 Pages

Exhibit R-2 (PE 0203735A)

1323

Item 142

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203735A Combat Vehicle Improvement Programs

D330

## FY 1998 Planned Program:

- 17000 Complete fabrication and assembly of demonstration hardware, continue logistics, quality and other concurrent engineering development efforts
- 10202 Continue contractor component testing and begin joint government / contractor system testing
- 10390 Provide Government Support/GFE
- 967 Small Business Innovative Research / Small Business Technology Transfer Programs
- Total 38559

## FY 1999 Planned Program:

- 900 Complete logistics, quality and other concurrent engineering developmental efforts, and finalize documentation
- 2800 Complete testing of hardware/software on tank
- 2721 Provide Government Support/GFE
- Total 6421

## B. Project Change Summary

FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
69749	33287	6421
71246	39787	
-2059	-1228	
69187	38559	6421

## C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Abrams IOTE (D2UT)	97	0	0	0	0	0	0	0	97
Abrams Upgrade Program (GA0750)	461999	582162	675603	647305	540982	586299	530939	344300	5897078
Abrams Vehicle Modification (GA0700)	62934	29230	53301	30447	62457	97092	119856	Cont'd	Cont'd
M1A2 Training Devices (GB1302)	12546	13076	13411	8218	10782	12087	12426	27000	155400
Training Device Mod (GA5208)	3170	2176	8536	2683	5473	5674	5671	13000	64600
Initial Spares (GE0161)	9248	13662	9800	9914	10844	16867	15976	38000	14567
PE 0604649A (DG26)	2000	0	0	0	0	0	0	0	2000
PE 0203758A (D374)	0	0	6700	0	0	0	0	0	22300

Project D330

Page 9 of 25 Pages

Exhibit R-2 (PE 0203735A)

1324

Item 142

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs									
		PROJECT D330									
<b>D. Schedule Profile</b>											
Program Milestones :											
PDR - Software											
CDR - Software											
Preliminary Mfg TDP Complete											
Begin Government/Contractor Testing											
Complete Government/Contractor Testing											
Contract Completion											
* Milestone Completed											

## Project D330

Page 10 of 25 Pages

Exhibit R-2 (PE 0203735A)

1325

Item 142

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs		D330		
<b>A. Project Cost Breakdown</b>						
GDLS Contract		FY 1997	FY 1998	FY 1999		
Texas Instruments Contract		56395	15000	900		
Government/Contractor Testing		7200	2000			
Government Support/GFE		1737	10202	2800		
SBIR / STTR		3855	10390	2721		
Total		69187	38559	6421		
<b>B. Budget Acquisition History and Planning Information</b>						
<b>Performing Organizations</b>						
Contractor or	Contract					
Government	Method/Type	Award or	Performing			
Performing	or Funding	Obligation	Activity			
Activity	Vehicle	Date	EAC			
<b>Product Development Organizations</b>						
Prior Contracts						
GDLS Phase I	SS-CPFF	Sep 94				
GDLS Phase II	SS-CPFF	Aug 95				
Sterling Hgts, MI						
Texas Instruments	C-CPAF	Jul 94				
McKinney, TX						
SBIR / STTR	N/A	N/A				
<i>Note: GDLS contracts (Phase I / Phase II) include funding from 0203758A / D374 and 0604649A / DG26</i>						
<b>Support and Management Organizations</b>						
PMO / Matrix Spt	MIPR					
GFE	MIPR					
<b>Test and Evaluation Organizations</b>						
Various Sites	MIPR					
<b>Government Furnished Property</b>						
Subtotal Product Development	None					
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						
Project D330						
Exhibit R-3 (PE 0203735A)						

Page 11 of 25 Pages

1326

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D344	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D344	Fire Support Team Vehicle Integration	17442	9614	10974	4106	0	0	0	0	78102	
<p><b>A. Mission Description and Justification:</b> The Bradley Fire Support (BFIST) vehicle program integrates Mission Equipment Packages (MEP) into a Bradley Fighting Vehicle and supports heavy maneuver force operations. BFIST replaces the aging M981 Fire Support Vehicle in our heavy divisions. BFIST allows fire support operations to be performed on the battlefield in vehicles with the same signature, survivability, and mobility as other Bradley maneuver units. This program supports material development and conversion of selected Bradley A2 Operation Desert Storm (ODS) based upgrades and Bradley A3 vehicles to the BFIST configuration. The A2 ODS based BFIST is designated M7 and the A3 version is A3 BFIST.</p> <p><b>Acquisition Strategy:</b> The BFIST program is executed in two-phases: Phase I converts Bradley A2 ODS platforms to the M7 BFIST configuration and Phase II converts Bradley A3 platforms to the A3 BFIST configuration. A Phase I Cost Plus Incentive Fixed Fee (CPIF), Engineering and Manufacturing Development (EMD) contract through full and open competition requires design and fabrication of four (4) BFIST prototypes for pre-production/user testing. Sole Source/Firm Fixed Price (SS/FFP) Low Rate Initial Production (LRIP) and Full Rate Production contracts with options followed a successful milestone decision. Follow-on Phase II focuses on the A3 BFIST. Full Rate Production contracts will be awarded for development and production of the Bradley BFIST.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>11609 Phase I Design Engineering</li> <li>1180 Phase I Prototype Manufacturing</li> <li>1500 Phase II Design Engineering</li> <li>3153 Program Management</li> <li>Total 17442</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>3050 Phase I Design Engineering</li> <li>1400 Phase I Prototype Manufacturing</li> <li>1118 Phase II Design Engineering</li> <li>1067 Program Management</li> <li>2138 3 LRIP IOTE/Test Vehicles</li> <li>600 P3I</li> <li>241 Small Business Innovative Research / Small Business Technology Transfer Programs</li> <li>Total 9614</li> </ul>											

Exhibit R-2 (PE 0203735A)

Page 12 of 25 Pages

Project D344

1327

Item 142

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203735A Combat Vehicle Improvement Programs

D344

## FY 1999 Planned Program:

- 1000 Phase I PVT/IOTE Test Support
- 5526 Phase II Design Engineering
- 2500 Phase II Prototype Manufacturing
- 1948 Program Management
- Total 10974

## B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
17915	7920	8974
18298	9920	
-856	-306	
17442	9614	10974

Change Summary Explanation: Funding -- FY 1999 increase (+2000) to provide development support to the A3 BFIST program. This continues Phase II A3 BFIST design.

## C. Other Program Funding Summary

GZ2300 FIST Vehicle (M7/A3 BFIST)

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
0	15595	20720	43455	47448	50113	62321	355818	595470

## D. Schedule Profile

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	2	3

## Phase I

First A2 ODS BFIST Prototype

Pre-Production Verification Test C/G

Limited User Test #1

LRIP Milestone Decision

LRIP Contract Award

## Phase II

Begin Design Engineering

Critical Design Review

Pre-Production Verification Test C/G

\* Milestone Completed

Project D344

Page 13 of 25 Pages

Exhibit R-2 (PE 0203735A)

1328

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs			D344
<b>A. Project Cost Breakdown</b>		FY 1997	FY 1998	FY 1999	
Phase I Design Engineering		11609	3050		
Phase I Prototype Manufacturing		1180	1400		
Phase II Design Engineering		1500	1118	5526	
Phase II Prototype Manufacturing				2500	
Program Management		3153	1067	1948	
LRIP IOTE Vehicles			2138		
Phase I PVT/IOT&E Test Support (Per Funding Policy)			600	1000	
SBIR/STTR			241		
Total		17442	9614	10974	
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
<b>Product Development Organizations</b>					
UDLP	C/CPIF	Jun 95		36689	28330
UDLP	CPFF	April 97		13302	1500
UDLP	SS/FFP	Dec 97		2138	2138
Other Contracts					4326
<b>Support and Management Organizations:</b>					
PM/Govt					3310
SBIR/STTR					2223
<b>Test and Evaluation Organizations:</b>					
ATC/TECOM					930
<b>Government Furnished Property: None</b>					
Subtotal Product Development					32656
Subtotal Support and Management					3310
Subtotal Test and Evaluation					930
Total Project					35966
Project D344					17442
					9614
					7706
					1308
					600
					9113
					241
					1165
					8026
					1783
					1165
					10974
					4106
					78102
					66053
					9354
					2695
					2695

Page 14 of 25 Pages

Exhibit R-3 (PE 0203735A)

1329

Item 142

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203735A Combat Vehicle Improvement Programs

D365

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D365 Bradley Linebacker	0	3877	0	0	0	0	0	0	0

**A. Mission Description and Budget Item Justification:** The Air Defense Alerting Device (ADAD) is an improved target acquisition sensor suite that will fully exploit the capabilities of the improved Stinger Block II Seekers on the Bradley Linebacker. The Bradley Linebacker provides air defense coverage for mechanized forces against airborne threats, such as: fixed and rotary wing aircraft, cruise missiles and UAVs. Target acquisition sensors and signal processing techniques are necessary to recognize and identify the threat targets that will support maximum range engagements and still avoid fratricide. Funding will be used by the Stinger Product Manager's Office to determine requirements for this improved sensor suite and to evaluate alternative seeker sensors using range testing.

**Acquisition Strategy:** The Air Defense Alerting Device acquisition approach will consist of four phases: Phase I involves Preliminary Studies and Analysis, Phase II involves Technology Demonstrations, Phase III involves Modeling and Simulation Feedback and Phase IV involves Assessing the Results and Determining viability of Follow-on Actions.

**FY 1997 Accomplishments:** Program not funded in FY 1997.

**FY 1998 Planned Program:**

- 3579 Preliminary Studies and Analysis
- 200 Project Management
- 98 Small Business Innovative Research/Small Business Technology Transfer Programs
- Total 3877

**FY 1999 Planned Program:** Program not funded in FY 1999.

**B. Project Change Summary**

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value		4000	
Adjustments to Appropriated Value		-123	
FY 1999 President's Budget	0	3877	0

Change Summary Explanation: FY 1998 increase result of Congressional plus-up (+4000) less (-123) for Congressional undistributed reductions.

Project D365

Page 15 of 25 Pages

Exhibit R-2 (PE 0203735A)

1330

Item 142

UNCLASSIFIED



RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT	
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs										D365	
C. Other Program Funding Summary Not Applicable													
D. Schedule Profile													
Award Study Effort													
* Milestone Completed													

Project D365

Page 16 of 25 Pages

1331

Exhibit R-2 (PE 0203735A)

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			0203735A Combat Vehicle Improvement Programs D365	
7 - Operational System Development						
A. <u>Project Cost Breakdown</u>						
Preliminary Studies and Analysis		FY 1997	FY 1998	FY 1999		
Project Management			3579			
SBIR/STTR			200			
Total		0	98			
			3877	0		
B. <u>Budget Acquisition History and Planning Information</u>						
Performing Organizations						
Contractor or	Method/Type	Award or	Performing	Project	Total	
Government	or Funding	Obligation	Activity	Office	Prior to	
Activity	Vehicle	Date	EAC	EAC	FY 1997	
Product Development Organizations						
TBD						
Support and Management Organizations						
PMO Stinger						
SBIR/STTR						
Test and Evaluation Organizations: Not applicable						
Government Furnished Property Not Applicable						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						

Project D365

Page 17 of 25 Pages

Exhibit R-3 (PE 0203735A)

Project D365

Page 17 of 25 Pages

Exhibit R-3 (PE 0203735A)

1332

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs								D371	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D371	Bradley Base Sustainment Program	85435	69287	67989	2312	0	0	0	0	480380	
<p><b>A. Mission Description and Justification:</b> The Bradley A3 program upgrades a proven, tracked combat vehicle with digital command and control, increased situational awareness, enhanced lethality and survivability, and supportability/sustainability improvements. This project funds engineering and manufacturing development (EMD) of the Bradley A3. The effort develops and fully integrates digital electronics featuring a 1553 databus core electronic architecture and upgraded vehicle system software packages (command and control, navigation, communications, fire control, system/component diagnostics, and embedded training capabilities), 2nd Gen FLIR, and other systems/components into renovated (overhauled) Bradley A2s. Current plans call for conversion of 1602 Bradley A2s to the Bradley A3 configuration.</p> <p><b>Acquisition Strategy:</b> Milestone II/IV for the Bradley A3 was held in FY94 and the program was approved for EMD. United Defense was subsequently awarded a Cost Plus Incentive Fee (CPIF) contract for development and integration of advanced A3 systems and components. Ten principal subcontractors, comprising approximately 33% of the contract cost, are participating in the EMD work effort. The first of eight prototypes was completed in 4QFY96; six prototypes are currently undergoing contractor and government production qualification testing. Low Rate Initial Production (LRIP) procurements were awarded in FY 1997 and FY 1998. Limited User Testing and Live Fire Testing will be conducted in FY 1998 and FY 1999, respectively.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>70333 Continued Design Engineering Effort</li> <li>6500 Continued Prototype Manufacturing</li> <li>3305 Began Prototype Qualification Testing (PQT) and Contractor Test Support</li> <li>5297 Project Management</li> <li>Total 85435</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>61171 Continue Design Engineering Effort</li> <li>1400 Continue Prototype Manufacturing Effort</li> <li>2344 Continue Prototype Qualification Testing; Begin Production Verification Testing (PVT) and Live Fire Testing</li> <li>2635 Project Management</li> <li>1737 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 69287</li> </ul>											

Project D371

Page 18 of 25 Pages

Exhibit R-2 (PE 0203735A)

1333

Item 142

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203735A Combat Vehicle Improvement Programs D371

## FY 1999 Planned Program:

- 50378 Continue Design Engineering Effort
- 16421 Complete Live Fire, PQT, and PVT Testing
- 1190 Project Management
- Total 67989

## B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	87753	69494	33989
Appropriated Values	89635	71494	
Adjustments to Appropriated Value	-4200	-2207	
FY 1999 President's Budget	85435	69287	67989

Change Summary Explanation: Funding: FY 1999 increase (+34000) due to realignment of funds from WTCV procurement to RDTE.

## C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
G80717 Bradley Base Sustainment	175878	115878	272564	352580	424460	429368	358820	Cont'd	Cont'd
GE0163 Spares (Initial) BFVS	2271	293	7130	9322	11822	10980	11199	Cont'd	Cont'd
G20900 Bradley FVS Training Devices	571		12728	23821	19027	2649	3256	Cont'd	Cont'd

## D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	2	3	4
X*							

PQT-Government

LRIP IPR

LRIP Award (Phased Awards)

Limited User Test #1

Production Verification Testing (PVT) -

Government

Limited User Test #2

\* Milestone Completed

Project D371

Page 19 of 25 Pages

Exhibit R-2 (PE 0203735A)

1334

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE		D371
7 - Operational System Development				0203735A Combat Vehicle Improvement Programs		D371
<b>A. Project Cost Breakdown</b>				FY 1997	FY 1998	FY 1999
Design Engineering				70333	61171	50378
Prototype Manufacture				6500	1400	
Testing				3305	2344	16421
Project Management				5297	2635	1190
SBIR/STTR					1737	
Total				85435	69287	67989
<b>B. Budget Acquisition History and Planning Information</b>						
<b>Performing Organizations</b>						
Contractor or	Contract					
Government	Method/Type	Award or	Performing	Total		
Performing	or Funding	Obligation	Activity	Prior to		
Activity	Vehicle	Date	EAC	FY 1997	FY 1998	FY 1999
<b>Product Development Organizations</b>						
United Defense	CPIF	Aug 95	295000	166684	57700	42451
San Jose, CA						
Texas Instruments	SS/CPIF	Feb 94	63720	53161	9951	3092
McKinney, TX						
Other Contracts				15198	7854	15998
<b>Support and Management Organizations:</b>						
PMO				4105	2092	1335
PM CCAWS				12863	3205	1300
SBIR/STTR				3346	1328	1030
Other						
Test and Evaluation Organizations:						
TECOM/Other					3305	2344
<b>Government Furnished Property: None</b>						
Subtotal Product Development				235043	75505	61541
Subtotal Support and Management				20314	6625	5402
Subtotal Test and Evaluation					3305	2344
Total Project				255357	85435	69287
Project D371				Exhibit R-3 (PE 0203735A)		

Page 20 of 25 Pages

1335

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT			
7 - Operational System Development					0203735A Combat Vehicle Improvement Programs					D718			
COST (In Thousands)					FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D718 Ground Combat Vehicle HTI					11343	17452	2012	16039	1010	1004	1003	0	49863

**A. Mission Description and Budget Item Justification:** The Suite of Survivability Enhancement Systems (SSES) is an effort to develop, produce and apply Defensive Aids Suites (DAS) to all Army ground combat vehicles. A DAS inhibits successful engagement of the host vehicle by providing advance warning of attack and activating countermeasures which obscure the protected platform and jam, decoy or deflect the enemy munitions. Advance warning enables the crew to take defensive action such as maneuvering or returning fire on the enemy. SSES leverages hit avoidance technology developed for aviation electronic warfare (EW) systems, incorporates changes to meet ground requirements, and returns technical improvements to the aviation EW community. It also incorporates ground vehicle specific hit avoidance technology being developed within the technology base. The first phase of this program, the development and fielding of Laser Warning Receivers (LWR) and the Commander's Decision Aid (CDA), is funded for application to the A3 Bradley Fighting Vehicle. The LWR will provide warning of laser assisted engagement of the host vehicle (e.g., laser range finding, laser designation for artillery attack or laser beamrider missile guidance). The LWR program leverages the existing AN/AVR-2A aviation LWR program. The CDA will integrate current and future sensors and countermeasures into the host vehicle's electronic architecture and will provide sensor fusion, threat prioritization and manual, semi-automatic or automatic activation of countermeasures. The CDA leverages work accomplished under the Hit Avoidance Advanced Technology Demonstration.

The Field Emissive Display (FED) program, also known as the High Performance Flat Panel Display (FPD) technology development program, is an effort to develop common, multi-purpose displays for Army ground combat vehicles. This includes the capability for real time interpretation and application of command and control, target imagery and situation awareness information. The FPD will also provide common, multi-purpose, high performance (low power, color, and sunlight readable, high-resolution) system displays. The application of the FPD supports the Force XXI Battle Command - Brigade and Below (FBCB2) operational requirement for the display of common imagery and data in removable and remote operations. In doing so, this program focuses on the near to mid-term opportunity to improve the performance of system displays for combat and combat support vehicles, both tracked and wheeled. The high performance FPD program takes advantage of advanced display technologies under development by the Defense Advanced Research Projects Agency (DARPA) by incorporating changes to meet the requirements of ground systems. System display performance specifications will optimize industry standard interfaces allowing incremental and inexpensive upgrades for future information display requirements. This program has been funded through congressional plus-ups, with \$7.0M provided in FY 1997 and \$12.0M in FY 1998.

As additional HTI projects are identified with funding, these projects will be added to and funded under project D718.

**Acquisition Strategy:** With regard to LWR effort, we will use existing contracts for RDTE. Full and Open Competition for Production with first year's purchase made using existing production contracts will mitigate risk of late delivery to vehicle production line (and avoid the attendant retrofit costs) and enable the return of technology improvement to aviation electronic warfare system.

Project D718

Page 21 of 25 Pages

Exhibit R-2 (PE 0203735A)

1336

UNCLASSIFIED

Item 142

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational System Development</b>	<b>0203735A Combat Vehicle Improvement Programs</b>	<b>February 1998</b>	<b>D718</b>
<b>FY 1997 Accomplishments:</b>			
•	1690 Developed Plans for and estimated cost of EMD and production. (SSES)		
•	396 Developed system and components specifications and interface control documents. (SSES)		
•	1700 Designed and fabricated 3 prototype Laser Warning Receivers (LWR). (SSES)		
•	786 Designed and fabricated A kits for Bradley A3. (SSES)		
•	200 Designed Bradley A3 specific CDA software (Main CDA development funded by Hit Avoidance ATD). (SSES)		
•	3221 FPD prototype electronics developed via semiconductor technology (FPD)		
•	3000 FPD prototype design completed (FPD)		
•	350 Common display functions derived from vehicle operational requirements for input to performance specification(FPD)		
Total	11343		
<b>FY 1998 Planned Program:</b>			
•	867 CDA Development and Test on Bradley A3 SIL. (SSES)		
•	1192 LWR and MWR technical tests and vehicle tests on prototype BFVS A3. (SSES)		
•	672 Vehicle Integration on BFVS A3. (SSES)		
•	614 Logistics Development (SSES)		
•	428 Systems Engineering and Simulation (SSES)		
•	1096 Operational Test in conjunction with BFVS A3 (SSES)		
•	966 Support and Management (ALL)		
•	10730 Design and build high resolution FPD engineering unit (FPD)		
•	450 Evaluate FPD Prototype Vehicle Interfaces (FPD)		
•	437 Small Business Innovative Research / Small Business Technology Transfer Programs		
Total	17452		
<b>FY 1999 Planned Program:</b>			
•	530 Operational Test Support in conjunction with BFVS A3. (SSES)		
•	200 Integration Test Support on BFVS A3. (SSES)		
•	595 Logistics Support, manual changes and logistical analysis. (SSES)		
•	587 Support and Management. (SSES)		
•	100 Continued FPD Development. (FPD)		
Total	2012		

Project D718

Page 22 of 25 Pages

Exhibit R-2 (PE 0203735A)

1337

Item 142

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE					
7 - Operational System Development		0203735A Combat Vehicle Improvement Programs				D718	
<b>B. Project Change Summary</b>		FY 1997	FY 1998	FY 1999			
FY 1998/1999 President's Budget		11651	2009	2012			
Appropriated Value		11900	18009				
Adjusted to Appropriated Value		-557	-557				
FY 1999 President's Budget		11343	17452	2012			
Program change summary: FY 1998 increase (+16000) result of Congressional increase (+12000 FED; +4000 LWR).							
<b>C. Other Program Funding Summary:</b> None							
<b>D. Schedule Profile</b>							
LWR Technical Test		FY 1997	FY 1998	FY 1999	FY 2000		
LWR Veh Integration		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4		
LWR/CDA Integration (SIL)		X*	X	X	X		
LUT 1							
LUT 2							
Log Demo							
IOTE							
PVT							
PEO IPT							
Contract Award							
FPD Performance Demo		X*					
Common Display Perf Spec		X*					
Performance Verification Test							
* Milestone Completed							

Exhibit R-2 (PE 0203735A)

Page 23 of 25 Pages

Item 142

1338

**UNCLASSIFIED**



UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203735A Combat Vehicle Improvement Programs D718

	FY1997	FY 1998	FY 1999
<b>A. Project Cost Breakdown</b>			
CDA Development & Test on Bradley A3 SIL (SSES)	200	867	
LWR & MWS Tech Test and vehicle tests on prototype BFVS A3 (SSES)		1192	
Vehicle Integration on BFVS A3 (SSES)	3912	672	100
Logistics Development (SSES)		614	595
Systems Engineering and Simulation (SSES)		428	
Operational Test in conjunction with BFVS A3 (SSES)		1096	530
Support and Management (ALL)	910	966	687
Design and build high resolution FED engineering unit (FPD)	6181	10730	100
Evaluate FPD Prototype Vehicle Interfaces (FPD)		450	
Complete common FPD performance specification (FPD)	140		
SBIR/STTR		437	
Total	11343	17452	2012

## B. Budget Acquisition History and Planning Information

### Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
Hughes (SSES)	Prod STS/FFP	Nov 97	11906	11906		1700	1672	885	7649	11906
UDLP LWR/CDA Spec Dev (SSES)	CPIF	Nov 97	4690	4690		2212	978		1500	4690
Sanders Lockheed Martin	CPAF	Nov 97	945	945		200	345	100	300	945
MICRON (FPD)	Cost/Share CPIF	Jan 98	17151	17151		6321	10730	100		17151
UDLP (FPD)	CPIF	Jan 98	225	225			225			225
GDLS (FPD)	CPIF	Jan 98	225	225			225			225
CECOM (SSES)	MIPR	Nov 97	923	923		200	483	240		923
TARDEC (SSES)	MIPR	Jan 98	866	866			687	179		866

Project D718 Page 24 of 25 Pages

Exhibit R-3 (PE 0203735A)

1339

Item 142

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT	
7 - Operational System Development					0203735A Combat Vehicle Improvement Programs					D718	
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Prod (Full/Open)	TBD	Jan 00	EAC 8795	EAC 8795					8795	8795	
SBIR/STTR							437			437	
TRW (SSES/FPD)	CPFF	Nov 97	177	177		30	67	40	40	177	
Camber (SSES)	CPAF	Nov 97	140	140		140				140	
STRICOM (SSES)	MIPR	Feb 98	250	250			250			250	
PM CCAWS (SSES)	MIPR	Nov 97	30	30			30			30	
Support and Management Organizations											
PM GSI (SSES)	MIPR	Oct 97	2278	2278		361	677	468	772	2278	
PM GSI (FPD)	MIPR	Oct 97	301	301		179	122			301	
PM Bradley	MIPR	Jan 98	100	100			100			100	
Test and Evaluation Organizations											
SLAD (SSES)	MIPR	Dec 97	288	288			288			288	
YPG, AZ (SSES)	MIPR	Jan 98	68	68			68			68	
RTTC, AL (SSES)	MIPR	Jan 98	68	68			68			68	
Government Furnished Property: None											
Subtotal Product Development						10803	16129	1544	18284	46760	
Subtotal Support and Management						540	899	468	772	2679	
Subtotal Test and Evaluation							424			424	
Totals:						11343	17452	2012	19056	49863	

Project D718

Page 25 of 25 Pages

Exhibit R-3 (PE 0203735A)

Project D718

Page 25 of 25 Pages

Exhibit R-3 (PE 0203735A)

1340

Item 142

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

Item 142

1341

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0203740A Maneuver Control System

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	27166	24510	28923	17976	10366	3747	3882	846	437309
D2HT MCS Operational Test	3673	0	0	0	0	0	0	0	8740
D484 Maneuver Control System	23493	24510	28923	17976	10366	3747	3882	846	428569

**Mission Description and Budget Item Justification:** This program element funds the evolutionary software development, integration and testing of the Maneuver Control System (MCS). Project D2HT, MCS Operational Test, supported the Limited Users Test (LUT) of MCS. Project D484, Maneuver Control System (MCS), automates command and control (C2) functions previously performed manually. It provides secure, automated assistance to the Operations Staff (G3/S3) and other key staff to meet the information needs of commanders for quicker decisions and application of battlefield resources. MCS provides standardized message sets, acquires commander's critical information requirements, and displays status screens and battlefield graphics. These projects involve the development, enhancement, and integration of software functionality that currently exists within the Army's inventory or is currently under development and are therefore appropriately included in Budget Activity 7.

Page 1 of 8 Pages

Exhibit R-2 (PE 0203740A)

1342

Item 143

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																														
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																															
7 - Operational System Development		0203740A Maneuver Control System								D2HT																															
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																															
D2HT	MCS Operational Test	3673	0	0	0	0	0	0	0	8740																															
<p><b>A. Mission Description and Justification:</b> Project D2HT - MCS Operational Test: The project finances the direct costs of planning and conducting operational testing and evaluation of the Maneuver Control System (MCS) by the Operational Test and Evaluation Command (OPTEC). MCS is an Acquisition Category (ACAT) ID system. Operational Testing and Evaluation was conducted in FY 97 via a Limited Users Test (LUT). Operational testing is conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system.</p> <p><b>Acquisition Strategy:</b> Not Applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>3291 Conducted MCS V12 Limited User's Test (LUT)</li> <li>382 Evaluation of MCS V12</li> </ul> <p>Total 3673</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>3772</td> <td>0</td> <td>0</td> </tr> <tr> <td>3895</td> <td></td> <td></td> </tr> <tr> <td>-222</td> <td></td> <td></td> </tr> <tr> <td>3673</td> <td>0</td> <td>0</td> </tr> </table> <p><b>C. Other Program Funding Summary:</b> Not Applicable</p> <p><b>D. Schedule Profile</b></p> <table border="0"> <tr> <td></td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>X*</td> <td>4</td> <td>1</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>3</td> <td>4</td> </tr> </table> <p>MCS V12 LUT</p> <p>*Milestone Complete Project D2HT</p>											FY 1997	FY 1998	FY 1999	3772	0	0	3895			-222			3673	0	0		FY 1997	FY 1998	FY 1999	1	2	3	4	X*	4	1	2			3	4
FY 1997	FY 1998	FY 1999																																							
3772	0	0																																							
3895																																									
-222																																									
3673	0	0																																							
	FY 1997	FY 1998	FY 1999																																						
1	2	3	4																																						
X*	4	1	2																																						
		3	4																																						

Exhibit R-2 (PE 0203740A)

Page 2 of 8 Pages

1343

Item 143

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE										D2HT
7 - Operational System Development		0203740A Maneuver Control System										
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999								
Operational Test and Evaluation		3673	0	0								
Total		3673	0	0								
B. Budget Acquisition History and Planning Information												
Performing Organizations												
Contractor or	Contract							Total				
Government	Method/Type							Prior to				
Performing	or Funding							FY 1997	FY 1998	FY 1999	Budget to	
Activity	Vehicle							EAC			Complete	
Product Development Organizations: None											Total	
Support and Management Organizations: None											Program	
Test and Evaluation Organizations												
Misc.	Allot	338	0	0	0	0	0	0	0	0	338	
TEXCOM	Allot	4554	3291	0	0	0	0	0	0	0	7845	
OEC	Allot	175	382	0	0	0	0	0	0	0	557	
Government Furnished Property: None												
Subtotal Product Development		0	0	0	0	0	0	0	0	0	0	
Subtotal Support and Management		0	0	0	0	0	0	0	0	0	0	
Subtotal Test and Evaluation		5067	3673	0	0	0	0	0	0	0	8740	
Total Project		5067	3673	0	0	0	0	0	0	0	8740	

Project D2HT

Page 3 of 8 Pages

Exhibit R-3 (PE 0203740A)

Project D2HT

Page 3 of 8 Pages

Exhibit R-3 (PE 0203740A)

1344

Item 143

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203740A Maneuver Control System								D484	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D484	Maneuver Control System	23493	24510	28923	17976	10366	3747	3882	846	428569	

**A. Mission Description and Justification: Project D484 - Maneuver Control System (MCS):** The project satisfies an urgent need for efficient command and control of tactical operations on the battlefield. MCS is the Army's tactical C2 system used in command posts from Corps to Battalion to provide automated C2 for the commander and staff at and between echelons (i.e., Force Level Control). MCS is the heart of the Army Battle Command System (ABCS) and provides critical coordination among Battlefield Functional Areas (BFAs) within each echelon. The primary component of controlling Force Level Information transactions is MCS's management of common picture information. This includes information across all Battlefield Operating Systems (BOSs) consisting of the Situation Map (SITMAP) using Defense Mapping Agency map data to display friendly and enemy unit locations, control measures (e.g., boundaries, phase lines, etc.), Intelligence and Electronic Warfare graphics, Fire Support plans, combat service support location information, air corridors and air defense weapons control information.

MCS software is based on the Common Operating Environment (COE) standard architecture with applications to automate C2 operations. MCS uses the Terrain Evaluation Module (TEM) for terrain analysis, planning and SITMAP graphical displays. The Unit Task Organization (UTO) Tool provides the commander and staff a means of organizing (graphically and textually) tactical Army units by echelon. Unit commanders and their staffs can quickly and efficiently prepare and disseminate combat orders with MCS's automated OPORD generating tool. MCS's report displays provide resource information roll-ups on all reporting battlefield units. In addition to serving as the common picture database for all ATCCS BFAs, MCS is the gateway for Situational Awareness information received from applique. MCS provides the Army "ground track" segment of the joint tactical common picture to the Army Global Command and Control System (AGCCS).

**Acquisition Strategy:** Since the initial MCS was introduced in Europe in 1981, this program has been and will continue to be, evolutionary software development, broken out into Blocks. The MCS capability continues to expand in pre-planned, time-phased steps toward the objective system. The final block of MCS software, Block IV, consists of development of Versions 12.1, 12.2 and Version 12.3, which will become the objective system. Versions 12.2 and 12.3 add applications and stand-alone functionality from V12.1. Therefore technical risk associated with each version is minimized. The use of a non-development item (NDI) tactical computer processor enables the MCS to capitalize on state of the art ruggedized, commercial equipment and reduce life cycle costs. Commencement of the transition to common hardware/software (CHS) began in FY 1989 with the initiation of the porting of software as well as the initiation of the integration of CHS into both the Standardized Integrated Command Post System (SICPS) and the existing Command and Control Unit vehicle.

**FY 1997 Accomplishments:**

- 21512 Continued MCS V12 development and integration efforts
- 175 Supported LUT activities
- 1806 Horizontal Battlefield Digitization
- Total 23493

Project D484

Page 4 of 8 Pages

Exhibit R-2 (PE 0203740A)

1345

Item 143

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>							
BUDGET ACTIVITY	PE NUMBER AND TITLE	DATE	PROJECT				
<b>7 - Operational System Development</b>	<b>0203740A Maneuver Control System</b>	<b>February 1998</b>	<b>D484</b>				
<b>FY 1998 Planned Program:</b>							
• 19362 Continue MCS V12 software development							
• 2660 Block III IOTE							
• 1888 Horizontal Battlefield Digitization							
• 600 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)							
Total	24510						
<b>FY 1999 Planned Program:</b>							
• 27135 Continue MCS V12 software development							
• 1788 Horizontal Battlefield Digitization							
Total	28923						
<b>B. Project Change Summary</b>							
FY 1998/1999 President's Budget		FY 1997	FY 1998				
Appropriated Value		24116	25641				
Adjustments to Appropriated Value		25187	25641				
FY 1999 President's Budget		-1694	-1131				
		23493	24510				
			28923				
Change Summary Explanation: Funding: FY 1999 (+4991) Increase accelerates initiation of software version 12.2 development Schedule: IOT&E with Block III Version 12.01 rescheduled to Jun 98.							
<b>C. Other Program Funding Summary</b>							
Other Procurement, Army		FY 1997	FY 1998				
BA9320 Maneuver Control System		13011	0				
MCS Spares - BS9710		849	0				
			FY 1999				
			13033				
			0				
			40117				
			0				
			52921				
			5115				
			640				
			2451				
		To Compl	54041				
			4473				
		Total Cost	544974				
			59058				
<b>D. Schedule Profile</b>							
V12.01 Limited User's Test		FY 1997	FY 1998				
Task Force XXI Participation	X*	1 2 3 4	1 2 3 4				
Prairie Warrior97 Operational Assessment	X*						
Division XXI Participation	X*						

**UNCLASSIFIED**



**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	D484
BUDGET ACTIVITY		PE NUMBER AND TITLE											
7 - Operational System Development		0203740A Maneuver Control System											
D. Schedule Profile		FY 1997			FY 1998			FY 1999					
	1	2	3	4	1	2	3	4	1	2	3	4	
IOT&E Completed								X					
Begin V12.2 Software Development													
Begin V12.3 Software Development											X		
*Milestone Complete													

Project D484

Page 6 of 8 Pages

Exhibit R-2 (PE 0203740A)

Item 143

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
7 - Operational System Development		0203740A Maneuver Control System				D484
A. Project Cost Breakdown						
Major Contracts	FY 1997	FY 1998	FY 1999			
	19267	20053	23113			
Support Contracts	256	55	477			
In-House Support	2660	982	4113			
GFE/Other	1310	2820	1220			
SBIR/STTR		600				
Total	23493	24510	28923			
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total Prior to FY 1997	
Performing Activity	Vehicle	Date		EAC	FY 1997	FY 1998
Product Development Organizations						
Block IV (LMC)	C/CPIF	Various			11200	14100
Block III (TKC)	C/CPIF/AF	Various			6910	5236
Other Contracts	C/Various	Various			1157	717
CECOM					1206	406
In-House					1304	422
Support and Management Organizations						
In-House					150	154
Other Contracts	C/Various				256	55
SBIR/STTR						600
Test and Evaluation Organizations						
OGA					1060	2660
Other Contracts					250	160

Project D484

Page 7 of 8 Pages

Exhibit R-3 (PE 0203740A)

1348

Item 143

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT		
BUDGET ACTIVITY		PE NUMBER AND TITLE			D484				
7 - Operational System Development		0203740A Maneuver Control System							
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Government Furnished Property									
Contract									
Product Development Property									
ATCCS Contr									
Pgm Spt Env									
Support and Management Property									
Test and Evaluation Property									
CHS-1 HW									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Project D484

Page 8 of 8 Pages

Exhibit R-3 (PE 0203740A)

Project D484

Page 8 of 8 Pages

Exhibit R-3 (PE 0203740A)

1349

Item 143

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
7 - Operational System Development										
0203744A Aircraft Modifications/Product Improvement Program										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	21836	21567	26681	8325	2589	4149	12976	Continuing	Continuing	
D028 Guardrail Common Sensor	0	0	0	859	1681	4149	12976	Continuing	Continuing	
D179 CH-47D Product Improvement	4481	0	0	0	0	0	0	0	4481	
D430 Improved Cargo Helicopter	17116	21567	26681	7466	908	0	0	0	78621	
D504 UH-60 Door Gun	239	0	0	0	0	0	0	0	239	
<p><b>Mission Description and Budget Item Justification:</b> This PE supports the CH-47 Product Improvement to upgrade T55-L-712 engines to T55-GA-714A configuration to increase power to meet lift requirements for mission needs. The Improved Cargo Helicopter (ICH) is a development program to extend useful life of the CH-47D Cargo Helicopter. This funding will assure heavy lift capability into the 21st century. The projects in this program element support development efforts for existing systems and are correctly placed in Budget Activity 7.</p>										

Page 1 of 11 Pages

Exhibit R-2 (PE 0203744A)

1350

Item 144

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998														
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT															
7 - Operational System Development		0203744A Aircraft Modifications/Product Improvement Program								D179															
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost															
D179	CH-47D Product Improvement	4481	0	0	0	0	0	0	0	4481															
<p><b>A. Mission Description and Budget Item Justification:</b> The engine upgrade program will convert the T55-L-712 engine to T55-GA-714A configuration, increasing power to allow the aircraft to carry its primary payloads under high altitude/temperatures. The CH-47D, as configured, does not meet its existing 1975 Required Operational Capability (ROC). The addition of numerous engineering changes to provide safety, the latest in operational technology, and improved communications has increased the empty weight of the aircraft. Upgrade of the T55-L-712 engine to T55-GA-714A configuration will provide the capability to meet the required operational capability.</p> <p><b>Acquisition Strategy:</b> Sole source contract for engineering changes and Low rate initial production contracts awarded.</p> <p><b>FY 1997 Accomplishments;</b></p> <ul style="list-style-type: none"> <li>• 4457 Initiate Engineering Changes</li> <li>• 24 Initiate Government In-house Support of the Engine Upgrade Effort</li> </ul> <p>Total 4481</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY98.</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY99.</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>4602</td> <td>0</td> <td>0</td> </tr> <tr> <td>4490</td> <td></td> <td></td> </tr> <tr> <td>-9</td> <td></td> <td></td> </tr> <tr> <td>4481</td> <td>0</td> <td>0</td> </tr> </table>											FY 1997	FY 1998	FY 1999	4602	0	0	4490			-9			4481	0	0
FY 1997	FY 1998	FY 1999																							
4602	0	0																							
4490																									
-9																									
4481	0	0																							

Project D179

Page 2 of 11 Pages

Exhibit R-2 (PE 0203744A)

1351

Item 144

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203744A Aircraft Modifications/Product Improvement Program								D179	
<u>C. Other Program Funding Summary</u>		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	
APA AA0252 CH-47 Cargo Helicopter Mods (MYP)*		47496	49559	87224	71765	178534	196720	199279	420010	1250627	
* Represents that portion of the program dedicated to CH-47 engine upgrade.											
<u>D. Schedule Profile</u>		FY 1997		FY 1998		FY 1999					
1		2	3	4	1	2	3	4	1	2	
Engineering Change				X							
Low Rate Initial Production Contract											

Project D179

Page 3 of 11 Pages

Exhibit R-2 (PE 0203744A)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE		
7 - Operational System Development				0203744A Aircraft Modifications/Product Improvement Program		D179
<b>A. Project Cost Breakdown</b>				<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Engineering Change				4457		
In-house Support				24		
Total				4481	0	0
<b>B. Budget Acquisition History and Planning Information</b>						
<b>Performing Organizations</b>						
Contractor or	Contract					
Government	Method/Type	Award or	Performing	Total		
Performing	or Funding	Obligation	Activity	Prior to		
Activity	Vehicle	Date	EAC	FY 1997	FY 1998	FY 1999
<b>Product Development Organizations</b>						
Allied Signal	SS/FP.	Sep 97		4457		
<b>Support and Management Organizations</b>						
Government			AMCOM	24		
In-house Support						
<b>Test and Evaluation Organizations: None</b>						
<b>Government Furnished Property: Not Applicable</b>						
Subtotal Product Development				4457		4457
Subtotal Support and Management				24		24
Subtotal Test and Evaluation						
Total Project				4481	0	4481
Project D179				Page 4 of 11 Pages		Exhibit R-3 (PE 0203744A)

Item 144

1353

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203744A Aircraft Modifications/Product Improvement Program								D430	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
COST (In Thousands)		17116	21567	26681	7466	908	0	0	0	78621	
D430 Improved Cargo Helicopter											
<p><b>A. Mission Description and Justification:</b> The Improved Cargo Helicopter (ICH) is a program to extend useful life of the CH-47D cargo helicopter. This funding will assure heavy lift capability into the 21st century. This program will award a contract for Engineering Manufacturing Development (EMD) which includes decreasing operation and support costs through vibration reduction/airframe stiffening, incorporating a new electronics/architecture system for compatibility with the digital battlefield and structural modifications as necessary to extend the life of the airframe. This program will be the basis for establishing remanufacture, modernization, and upgrade program to meet the readiness needs of the future for heavy lift capability.</p> <p><b>Acquisition Strategy:</b> Sole source development contract in Engineering Manufacturing Development (EMD) stage leading to production contract in FY 00.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 880 Initiate Technical assessment Electronic-Architecture Assessment in advance of Risk Reduction Contracts</li> <li>• 500 Initiate Airworthiness Design Specification Study</li> <li>• 2324 Initiate Flight Test II operational field trials</li> <li>• 1600 Initiate Request for Proposal (RFP) Board</li> <li>• 3819 Continue In-house and program management administration</li> <li>• 7993 Initiate Program Definition Risk Reduction for the Airframe and the Electronic Architecture</li> <li>• Total 17116</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 16884 Initiate Engineering Manufacture Development (EMD)</li> <li>• 2458 Continue In-house and program management administration</li> <li>• 1684 Continue Government Test and Evaluation</li> <li>• 541 Small Business Innovative Research and Small Business Technology Transfer</li> <li>• Total 21567</li> </ul>											

Project D430

Page 5 of 11 Pages

Exhibit R-2 (PE 0203744A)

1354

Item 144

UNCLASSIFIED



**RD&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

## February 1998

**PE NUMBER AND TITLE**

0203744A Aircraft Modifications/Product

## Improvement Program

**D430**

•	21300	Continue Engineering Manufacturing Development (EMD)
•	3923	Continue In-house and program management administration
•	400	Provide Government furnished equipment for EMD
•	1058	Continue Government Test and Evaluation
Total	26681	

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
17539	2609	28791

**FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 Pres Bud Request**

Change Summary Explanation: Funding: FY 98 (+18958) increase due to Congressional plus-up (+20000) and a decrease due to undistributed Congressional Reductions (-1042)

### **C. Other Program Funding Summary**

APA, SSN AA0254, CH-47 ICH

#### **D. Schedule Profile**

Programmatic Documentation  
Vibration Analysis Support  
Risk Reduction  
Engineering Manufacturing Development

Page 6 of 11 Pages

Exhibit R-2 (PE 0203744A)

Item 144

**UNCLASSIFIED**

[illegible]

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT		
7 - Operational System Development					0203744A Aircraft Modifications/Product Improvement Program					D430		
Contract												
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Support and Management Organizations												
Army Aviation & Missile Comd/PEO AVN				10107	1307	3419	1958	3423		10107		
Army Training & Doctrine Command				2285	1160	1125				2285		
Aviation Center-Ft. Rucker												
Army Training & Doctrine Cmd		Aug 96		850	200	650				850		
Anal Cntr-Ft Lee SBIR/STTR				541			541			541		
Test and Evaluation Organizations												
Operational Test and Eval Command				3377		635	1684	1058		3377		
Government Furnished Property												
Contract												
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Product Development Property												
Support and Management Property: None												
Test and Evaluation Property: None												
400												
</												

Project D430

Page 8 of 11 Pages

Exhibit R-3 (PE 0203744A)

1357

Item 144

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT	
7 - Operational System Development	0203744A Aircraft Modifications/Product Improvement Program			D430	
	Total			Budget to	Total
	Prior to			Complete	Program
	FY 1997	FY 1997	FY 1998	FY 1999	
	2216	11287	17384	22200	61461
Subtotal Product Development	2667	5194	2499	3423	13783
Subtotal Support and Management		635	1684	1058	3377
Subtotal Test and Evaluation		17116	21567	26681	78621
Total Project	4883				
Project D430					
Page 9 of 11 Pages				Exhibit R-3 (PE 0203744A)	
1358				Item 144	

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

**0203744A Aircraft Modifications/Product**

## Improvement Program

## PROJECT

**D504**

[illegible]

**A. Mission Description and Budget Item Justification:** This project supports operational testing of the GAU/19.50 caliber weapon system on the Black Hawk helicopter to determine the appropriate defensive armament carried by the Army utility helicopters for self-protection and landing zone suppression during airborne assaults. This project was a new start in FY 1997.

**Acquisition Strategy:** Not applicable.

**FY 1997 Accomplishments:**

- 239 Operational test of the GAU/19.50 caliber weapon system on a Black Hawk helicopter.
- 239
- Total

**FY 1998 Planned Program:** Project not funded in FY98.

**FY 1999 Planned Program:** Project not funded in FY99.

## **B. Project Change Summary**

FY 1998President's Budget	245	0
Appropriated Value	239	
Adjustments to Appropriated Value		
FY 1999Pres Budget Request	239	0

**C. Other Program Funding Summary:** Not applicable

#### **D. Schedule Profile**

**D. Schedule Profile**

# Operational Testing on Black Hawk Armament

Project D504

Page 10 of 11 Pages

Exhibit R-2 (PE 0203744A)

1359

Item 144

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0203744A Aircraft Modifications/Product

D504

Improvement Program

## A. Project Cost Breakdown

Operational Testing on Black Hawk Armament

Total

FY 1997

239

FY 1998

0

FY 1999

0

## B. Budget Acquisition History and Planning Information

## Performing Organizations

Contractor or

Government

Performing Activity

Method/Type or Funding Vehicle

Award or Obligation Date

Performing Activity

Project Office EAC

Total Prior to FY 1997

FY 1997

FY 1998

FY 1999

Budget to Complete

Total Program

239

0

0

239

239

239

239

239

239

239

239

239

239

239

239

Project D504

Page 11 of 11 Pages

Exhibit R-3 (PE 0203744A)

1360

Item 144

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1361

Item 144

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
7 - Operational System Development		0203752A Aircraft Engine Component Improvement Program		D106						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D106	Aircraft Engine Component Improvement Program (CIP)	3734	2849	2948	3026	3098	3317	3416	Continuing	Continuing
<p><b>A. Mission Description and Budget Item Justification:</b> Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&amp;S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction. The tasks in this project support development of upgrades to current production vehicles and are appropriately funded in Budget Activity 7.</p> <p><b>Acquisition Strategy:</b> Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1400 <b>T700 Engine:</b> Completed analysis for the update of life limits on the T700-701 engine components utilizing improved analytical and modeling techniques. Design and qualification testing of a WGC HMU T2 Sensor Coating that will prevent related engine stalls. Initiated program with the Navy to provide engine monitoring equipment for Black Hawk to gather field data used to define mission profiles used in life analysis calculations. Redesign HI-Temp connector for the Speed and Torque sensor for maintainability problems. Developed engine running water wash system to reduce downtime in combat. Initiated Electrical Cable EMI shielding improvements for engine wiring harnesses based on recent test results to improve reliability/enhance safety. Design and test an Improved "A" Sump Pressure System to preclude oil leaks to extend service life/reduce O&amp;S cost.</li> <li>1000 <b>T55 Engine:</b> Continued to develop bearing improvements to improve reliability and fatigue life/ reduce cost. Completed machined combustor liner program to improve durability and survivability and reduce O&amp;S costs. Completed pinned first turbine blade program to prevent catastrophic engine failure from blades shifting forward. Continued to design improved compressor impeller to improve efficiency/extend service life and reduce cost.</li> <li>942 <b>LOLA Engine Fuel Pump:</b> Completed design of a Liquid Or Light-ends/Air (LOLA) engine fuel pump for UH-60 Black Hawk and Apache to prevent uncommanded engine shutdowns in flight/ restore design flight safety and eliminate operational restrictions.</li> <li>300 <b>GTCP 36 APU:</b> Developed multiple element thermocouple for Black Hawk to improve accuracy and reduce premature APU removals/reduce O&amp;S cost. Designed and tested improved Apache fuel line connection to eliminate leaks/restore design safety. Test and qualify the Longbow shaft torque limiting valve for use on Apache to reduce gearbox over-torques, improve readiness/reduce O&amp;S cost. Develop &amp; qualify a mainshaft bearing retention device to prevent race spinning and wear to preclude premature APU removal/reduce O&amp;S cost.</li> <li>92 <b>In-house cost.</b></li> <li>Total 3734</li> </ul>										

Project D106

Page 1 of 5 Pages

Exhibit R-2 (PE 0203752A)

1362

Item 145

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0203752A Aircraft Engine Component Improvement Program	D106	
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1400 <b>T700 Engine:</b> Perform T700-700 and 701C turbine disc heat transfer and stress analysis to update life limits/preclude catastrophic failures. Install field performance monitors in select Black Hawks to collect field engine performance data needed to validate life calculations. Bench test improved Electrical Cable shielding to resolve known EMI deficiency; improve reliability/enhance safety. Complete design and test an Improved "A" Sump Pressure System to preclude chronic oil leaks/extend service life. Engine test at CCAD HI-Temp connector.</li> <li>• 1000 <b>LOLA Engine Fuel Pump:</b> Complete design assurance testing, qualification testing, engine testing and flight testing as a part of a two year project funded in FY97 (directed effort). The LOLA pump will prevent uncommanded engine shutdowns in flight/ restore design flight safety and eliminate operational restrictions.</li> <li>• 300 <b>T55 Engine:</b> Continue redesign of bearings to reduce cost and improve reliability and fatigue life. Begin redesign of exterior plumbing to meet current flight safety standards for fireproofing of oil and fuel lines. Design electronic N2 speed sensor to replace the current mechanical system resulting in improved reliability/reduced O&amp;S cost. Redesign T55 tailpipe to improve reliability and reduce performance losses/improve readiness &amp; reduce cost.</li> <li>• 79 <b>GTCP 36 APU:</b> Perform 200 hour engine test to qualify improved hardware developed in previous CIP efforts. Complete testing of shaft torque limiting valve for application to the Apache to reduce gearbox over-torques, improve readiness/reduce O&amp;S cost. Evaluate potential for commonality of parts between Black Hawk, Apache and Air Force APUs to reduce O&amp;S cost.</li> <li>• 70 <b>IN-HOUSE:</b> In house support for the component improvement program engineers.</li> <li>• Small Business Innovative Research/ Small Business Technology Transfer Programs</li> <li>Total 2849</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1568 <b>T700 Engine:</b> Continue fracture mechanics and stress analysis on T700-700 and -701C turbine rotors to update life limits/preclude catastrophic failures. Continue data gathering &amp; analysis from Black Hawk mission recorders to permit accurate life limits updates. Qualify and flight test electrical cables with improved shielding to resolve known EMI deficiency; improve reliability/enhance safety.</li> <li>• 1000 <b>T55 Engine:</b> Complete qualification testing of bearings to reduce cost and improve reliability and fatigue life. Continue plumbing redesign program to meet current fireproofing flight safety standards for oil and fuel lines. Continue electronic N2 speed sensor design program to improve reliability/reduce O&amp;S cost. Continue tailpipe redesign program improve readiness &amp; reduce cost.</li> <li>• 300 <b>GTCP 36 APU:</b> Tear-down and analyze high-time Black Hawk and Apache APUs to determine incipient failures/ identify need for redesign to extend service life and reduce O&amp;S cost. Develop an erosion resistant turbine wheel for Black Hawk APU to extend service life/ reduce O&amp;S cost.</li> <li>• 80 In-House</li> <li>Total 2948</li> </ul>			

Project D106

Page 2 of 5 Pages

Exhibit R-2 (PE 0203752A)

1363

Item 145

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			D106
7 - Operational System Development	0203752A Aircraft Engine Component Improvement Program			
<b>B. Project Change Summary</b>				
FY 1998/1999 President's Budget	FY 1998	FY 1999		
Appropriated Value	3834	2940	2933	
Adjustments to Appropriated Value	3742	2940		
FY 1999 President's Budget	-8	-91		
	3734	2849	2948	
<b>C. Other Program Funding Summary:</b> There are no other RDTE or other Appropriation efforts.				
<b>D. Schedule Profile</b>				
	FY 1997	FY 1998	FY 1999	
	1	2	3	4
<b>T700 Engine:</b> Complete improved "A" sump redesign and qualification testing.				
<b>LOLA Engine Fuel Pump</b>				
Design Complete				
<b>T55 Engine:</b> Develop improved bearings to reduce O&S cost and improve bearing life				
<b>GTCP 36 APU:</b> Improved thermocouple designed and tested.				
<b>T700 Engine:</b> Complete electrical cable EMI shielding design and qualify improvements.				
<b>T55 Engine:</b> Design Fireproof Exterior Plumbing.				
<b>GTCP 36 APU:</b> Complete testing of torque limiting valve				
<b>T700 Engine:</b> T2 Sensor Coating.				
<b>T55 Engine:</b> Develop pinned retention feature for first stage turbine blades to improve flight safety.				
<b>T700 Engine:</b> Hi-Temp connector for speed and torque sensor				
Project D106		Exhibit R-2 (PE 0203752A)		Item 145

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

**PE NUMBER AND TITLE**

**0203752A Aircraft Engine Component Improvement Program**

**PROJECT  
D106**

### **D. Schedule Profile**

	FY 1997
1	2
	3

FY 1998

FY 1999

3 4 1 2 3 4  
X

**T55 Engine: LOLA Engine Fuel Pump:**  
Complete design and qualification testing.

Project D106

Page 4 of 5 Pages

**Exhibit R-2 (PE 0203752A)**

1365

Item 145

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0203752A Aircraft Engine Component  
Improvement Program

D106

## A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	3734	2849	2948
Support and Management	0	0	0
Test and Evaluation	0	0	0
Total	3734	2849	2948

## B. Budget Acquisition History and Planning Information

## Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
General Electric	SS/CPFF	Dec 94			38418	1400	1400	1568	Cont	Cont
Allied Signal	SS/CPFF	Dec 94			17872	1000	1000	1000	Cont	Cont
Air Force	MIPR	Jun 96			12600	1242	300	300	Cont	Cont
Chandler Evans	SS/CPFF	Jun 96								
<b>Support and Management Organizations</b>										
ATCOM (In House)	MIPR	Dec 94			10342	92	149	80	0	10663
T53 Engine					352			0	0	352

Test and Evaluation Organizations: Not Applicable

Government Furnished Property: Not Applicable

Subtotal Product Development	68890	3642	2700	2868	Cont	Cont
Subtotal Support and Management	10694	92	149	80	0	11015
Subtotal Test and Evaluation Organizations	79584	3734	2849	2948	0	0
Total Project					Cont	Cont

Project D106

Page 5 of 5 Pages

Exhibit R-3 (PE 0203752A)

1366

Item 145

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1367

Item 145

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203758A Digitization								D374	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D374	Horizontal Battlefield Digitization	98124	94103	45007	29445	28248	16337	15368	Continuing	Continuing	

**A. Mission Description and Budget Item Justification:** This program provides the interoperability of combat, combat support, and combat service support platforms (i.e., tanks, fighting vehicles, aircraft, command/control and logistics/resupply) and battlefield automated systems (i.e., Maneuver Control System (MCS)/Phoenix, Force XXI Battle Command, Brigade and Below (FBCB2), Advanced Field Artillery Tactical Data System (AFATDS), Forward Area Air Defense Command, Control and Intelligence (FAADC2I), All Source Analysis System (ASAS), Combat Service Support Control System (CSSCS)) with common technology through new acquisitions, Pre-Planned Product Improvements (P3I), and system-component upgrades. The application of common technologies across multiple systems through an integrated and seamless battlefield architecture improves the capabilities of battlefield systems that fight together as units or integrated task forces, providing a significant and potentially decisive warfighting improvement to the force. Battlefield digitization allows the Army's primary weapons and battle command systems to see, acquire and engage threats while sharing the same information with equal clarity, using advanced technologies and digital communications. To prove out concepts and requirements, near term efforts were focused on developing a seamless battlefield architecture and digitized appliqué systems to support experimentation with brigade-sided maneuver task force in FY 1997 and a division level experiment in FY 1998. This program supports the horizontal battlefield systems program integration office (Army Digitization Office), responsible for the overall horizontal integration of digitization capabilities throughout the Army. Supports engineering and integration of FBCB2 capability for the Abrams tank using government furnished equipment (GFE) FBCB2 hardware/software and provides the M1A1 with basic situational awareness and Command and Control via FBCB2. Supports engineering and integration of FBCB2 into the Bradley Fighting Vehicle Legacy Fleet and a "go-to-war" FBCB2 capability to the M2/M3 A2 ODS (which were changes made to the basic vehicle as a result of lessons learned from Operation Desert Storm). Also, provides comprehensive modeling and simulation efforts, thorough requirements analysis to combine AWE, operational architecture, interoperability exchange requirements with technical overheads to obtain realistic data traffic flows and mission thread analysis; and the system engineering required to ensure First Digitized Division command and control systems are fully interoperable. This program element is appropriately placed in Budget Activity 7 since it supports experimentation, system integration, interoperability and modification of equipment in the Army inventory.

**Acquisition Strategy:** Starting in FY 99, FBCB2 was transferred to a new program element 0203759A entitled "Force XXI Battle Command, Brigade and Below." Digitization resources the systems engineering, testing, and integration of digital capability across multiple command and control, communications, sensor and weapons platforms. The result will be an integrated digital capability to multiple battlefield operating systems, with initial emphasis on meeting the near-term requirements for the first digitized division. Also, supports Army's part of joint and multinational digitization programs; coordinates/manages security, vulnerability and "Red Teaming" functions; and manages MANPRINT, modeling and simulations, analysis and supports Advanced Warfighting Experiments (AWEs).

**FY 1997 Accomplishments:**

- 16578 Continued development of appliques and their platform integration.
- 31470 Continued development of command and control software for brigade and below.
- 25948 Conducted simulation, experimentation and evaluation of prototype hardware and software.

Project D374

Page 1 of 5 Pages

Exhibit R-2 (PE 0203758A)

1368

UNCLASSIFIED

Item 146

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational System Development</b>	<b>0203758A Digitization</b>	<b>D374</b>	
<p><b>FY 1997 Accomplishments: (continued)</b></p> <ul style="list-style-type: none"> <li>• 4662 Completed development of data distribution system.</li> <li>• 7166 Interoperability: Continued development of protocols and standards, M1A2/appliqué digital connectivity, and Battlefield Interoperability Program.</li> <li>• 4300 Initiated modification to existing FBCB2 hardware and development of new integrated appliqué software for M1A1 and M2A2.</li> <li>• 8000 Initiated rapid acquisition of software enhancements for the Tactical Internet.</li> </ul> <p>Total 98124</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1500 Equip and train IBN test unit and conduct LUT.</li> <li>• 15000 Hardware to support IOTE testing.</li> <li>• 15322 Continue development and upgrades to Brigade and Below Command and Control Software.</li> <li>• 13641 Continue test, simulation, experimentation and evaluation of prototype hardware and software.</li> <li>• 13034 System Engineering/Development/Platform Integration.</li> <li>• 10311 Interoperability: Abrams/Bradley/FBCB2 digital connectivity, and Battlefield Interoperability Program.</li> <li>• 3432 Complete development of FBCB2 software interface with Abrams and Bradley.</li> <li>• 5665 Continue rapid acquisition of software enhancements for the Tactical Internet.</li> <li>• 2885 Analysis (including modeling/simulation) to predict overall digitized system of systems performance.</li> <li>• 4595 Thorough validation of digital requirements/architecture to ensure realistic/adequate data flows, mission thread analysis, interoperability, human resource engineering, security, and physical layout.</li> <li>• 1320 Integration tools, plans, specifications, and other training, logistics, interface, and configuration management products.</li> <li>• 5665 Tactical Personal Communications.</li> <li>• 1733 Small Business Innovative Research/Small Business Technology Programs.</li> </ul> <p>Total 94103</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 6388 Test, experimentation and simulation of prototype hardware/software.</li> <li>• 4099 System Engineering/Platform Integration</li> <li>• 3500 International Command &amp; Control System/ Integration Program/ Battlefield Interoperability Program</li> <li>• 4110 Analysis (including modeling/simulation) to predict overall digitized system of systems performance.</li> <li>• 6225 Thorough validation of digital requirements/architecture to ensure realistic/adequate data flows, mission thread analysis, interoperability, human resource engineering, security, and physical layout.</li> <li>• 1885 Integration tools, plans, specifications, and other training, logistics, interface, and configuration management products.</li> </ul>			

Project D374

Page 2 of 5 Pages

Exhibit R-2 (PE 0203758A)

1369

Item 146

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																																																																																																				
BUDGET ACTIVITY	PE NUMBER AND TITLE																																																																																																						
<b>7 - Operational System Development</b>		<b>February 1998</b>																																																																																																					
		<b>D374</b>																																																																																																					
<p><b>FY 1999 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>18800 Complete software/hardware integration, procure prototypes and initiate testing of FBCB2 in M1A2 SEP, M1A1 Abrams, and M2A2ODS Bradley.</li> </ul> <p>Total 45007</p>																																																																																																							
<p><b>B. Project Change Summary</b></p> <p>FY 1998/99 President's Budget Request</p> <p>Appropriated Value</p> <p>Adjustments to Appropriated Value</p> <p>FY 1999 President's Budget Request</p>		<p>FY 1997</p> <p>88125</p> <p>90180</p> <p>+7940</p> <p>98120</p>	<p>FY 1998</p> <p>57333</p> <p>71560</p> <p>+22543</p> <p>94103</p>	<p>FY 1999</p> <p>49487</p> <p></p> <p></p> <p>45007</p>																																																																																																			
<p><b>Change Summary Explanation:</b></p> <p>FY 1997 - Congressional increase for WRAP Initiatives - for FBCB2 Software Interface/Integration with M1A1/M2A2 and for Tactical Internet.</p> <p>FY 1998 - Congressional increase for continued WRAP Initiatives - \$2.4M for FBCB2 Software Interface/Integration with M1A1/M2A2 and \$5.7M for Tactical Internet, and \$5.7M for Tactical Personal Communications. Also includes Army's Congressional emergency reprogramming for Digitization - \$16.2M FBCB2 Software development and hardware to support IOTE testing, and \$8.8M for Systems Integration.</p> <p>FY 1999 - Transferred \$29.7M from Proj D374 to new FBCB2 Program Element 0203759A, Project D120; transferred \$5.8M to OPA SSN BZ9962 to procure LAN routers to support fielding of digitized division and corps; increased funding \$12.22M for Systems Integration; and increased funding \$18.8M for engineering/procurement of an integrated FBCB2 capability for M1A2 SEP and M1A1 Abrams using GFE FBCB2 software/hardware and "go-to-war" FBCB2 capability to M2A2ODS.</p>																																																																																																							
<p><b>C. Other Program Funding Summary:</b> Not applicable</p>																																																																																																							
<p><b>D. Schedule Profile</b></p> <table border="1"> <thead> <tr> <th></th> <th colspan="3">FY 1997</th> <th colspan="3">FY 1998</th> <th colspan="3">FY 1999</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Brigade Task Force XXI AWE</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NTC Rotation for TF XXI</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>FBCB2 MS I/II Decision Review</td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Integrated Product Team (IPT) Review</td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Version 2.0 FBCB2 Software Delivery</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Division XXI AWE</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FBCB2 Software Interface/Integration with Abrams and Bradley</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Develop Tactical Internet Software</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Limited User Test (LUT)</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					FY 1997			FY 1998			FY 1999				1	2	3	4	1	2	3	4	Brigade Task Force XXI AWE	X								NTC Rotation for TF XXI		X							FBCB2 MS I/II Decision Review			X	X					Integrated Product Team (IPT) Review			X						Version 2.0 FBCB2 Software Delivery				X					Division XXI AWE					X				FBCB2 Software Interface/Integration with Abrams and Bradley				X					Develop Tactical Internet Software				X					Limited User Test (LUT)				X				
	FY 1997			FY 1998			FY 1999																																																																																																
	1	2	3	4	1	2	3	4																																																																																															
Brigade Task Force XXI AWE	X																																																																																																						
NTC Rotation for TF XXI		X																																																																																																					
FBCB2 MS I/II Decision Review			X	X																																																																																																			
Integrated Product Team (IPT) Review			X																																																																																																				
Version 2.0 FBCB2 Software Delivery				X																																																																																																			
Division XXI AWE					X																																																																																																		
FBCB2 Software Interface/Integration with Abrams and Bradley				X																																																																																																			
Develop Tactical Internet Software				X																																																																																																			
Limited User Test (LUT)				X																																																																																																			
Project D374		Exhibit R-2 (PE 0203758A)																																																																																																					

Page 3 of 5 Pages

1370

Item 146

## UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998		PROJECT							
BUDGET ACTIVITY										PE NUMBER AND TITLE						D374					
7 - Operational System Development										0203758A Digitization											
D. <u>Schedule Profile</u>										FY 1997				FY 1998				FY 1999			
										1	2	3	4	1	2	3	4	1	2	3	4
US/UK Lab Interoperability Demo																					
US/UK Field Demo												X									
Develop ATCCIS International Stds																		X			
Develop International C2 Op Arch.																		X			
Develop International MCS Gateway																					X
Tactical Personal Communications																X					
Corps Warfighter Exercise																		X			
Procure FBCB2 Integration Kits																		X			
Initiate testing FBCB2 in M1A1 and M1A2SEP																				X	

Project D374

Page 4 of 5 Pages

Exhibit R-2 (PE 0203758A)

Project D374

Page 4 of 5 Pages

Exhibit R-2 (PE 0203758A)

1371

Item 146

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
7 - Operational System Development		0203758A Digitization		D374
<b>A. Project Cost Breakdown</b>		<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>
Hardware Development/Integration		18710	18285	
Software Development		31180	20792	
Development, Experimentation, & Evaluation		26724	19239	5529
Program Management and Engineering Support		9210	10492	8458
Hardware/Software Integration of FBCB2 with M1A1/M2A2		1200		
Develop FBCB2 and M1A1/M2A2 Integration Package		3100	3432	
Software/Hardware Integration M1A2SEP and M1A1 Abrams				8700
Procure M1A1/M2A2 prototypes and initiate Abrams and				10100
Bradley C2 testing				
Software Acquisition Tactical Internet		8000	5665	
Tactical Personal Communications			5665	
Detailed digital architecture			8800	12220
engineering/integration/implementation				
SBIR/STTR			1733	
Total		98124	94103	45007
<b>B. Budget Acquisition History and Planning Information:</b>		Not Applicable		

Exhibit R-3 (PE 0203758A)

Page 5 of 5 Pages

Project D374

Item 146

1372

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1373

Item 146

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203759A Force XXI Battle Command, Brigade and Below(FBCB2)								D120	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D120 Force XXI Battle Command, Brigade & Below (FBCB2)		0	0	52469	47000	30000	20000	20000	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification:</b> The initial FBCB2 effort was developed under Program Element 0203758A Project D374 as part of the Army's digitization initiative and was transferred to this Program Element for central management by PEO C3S/PM Applique beginning in FY-99. The mission of FBCB2 is to field a Digital Battle Command information system that provides mounted tactical combat, combat support, and combat service support commanders, leaders, and soldiers integrated, on-the-move, real-time/near real-time, battle command and information and situation awareness from brigade down to the soldier/platform level across all battlefield functional areas (BFAs). FBCB2 is located in the mounted and dismounted maneuver (divisional, separate, heavy and light) cavalry/reconnaissance and armored cavalry, mechanized infantry and aviation units; FBCB2 integrates ATCCS located within the brigade and battalion. Battlefield digitization allows the Army's primary weapons and battle command systems to see, acquire, and engage threats while sharing the same information with equal clarity, using advanced technologies and digital communications. FBCB2 develops a seamless battlefield architecture and digitized appliqué systems (computer with graphics display, global positioning system, communications link, and command and control software) required to field the First Digitized Division by FY-00 and First Digitized Corps by FY-04/05.</p> <p><b>Acquisition strategy:</b> The primary goal of the FBCB2 acquisition is to minimize the time, cost, and technology risks of satisfying requirements while providing a capability that is fully integrated with the overall Division's warfighting capabilities. The technical approach involves the incorporation of digital communications, situation awareness and digital message traffic capabilities in a variety of embedded and non-embedded platforms. These platforms are then connected through communications infrastructure provided by the Tactical Internet. Interoperability is provided through the use of graphics, images common messages and data elements. The interfaces between FBCB2 and ATCCS systems will provide users at all levels a common picture of their battlespace. The Program Executive Officer for Command, Control and Communications (PEOC C3S) is responsible for executing the FBCB2, ATCCS, communications infrastructure, and weapons platforms.</p> <p><b>FY 1997 Accomplishments:</b> Program Funded in Program Element 0203758A Project D374 in FY 1997.</p> <p><b>FY 1998 Planned Program:</b> Program Funded in Program Element 0203758A Project D374 in FY 1998.</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 33793 Brigade and Below Command and Control software/hardware development/upgrades.</li> <li>• 5973 Simulation, experimentation and evaluation of prototype software (Version 3.0 &amp; 3.1)</li> <li>• 12703 System Engineering/Test/Integration/Training</li> </ul> <p>Total 52469</p>											

Project D120

Page 1 of 3 Pages

Exhibit R-2 (PE 0203759A)

1374

Item 147

UNCLASSIFIED



**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
7 - Operational System Development		D120	
PE NUMBER AND TITLE		0203759A Force XXI Battle Command, Brigade and Below(FBCB2)	
<b>A. Project Cost Breakdown:</b>			
Major Contracts	FY 1997	FY 1998	FY 1999
	0	0	47318
Support Contracts	0	0	2101
In-house/Matrix	0	0	3050
Total	0	0	52469
<b>B. Budget Acquisition History and Planning Information</b>			
<b>Performing Organizations</b>			
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC
<b>Product Development Organizations</b>			
TRW	CPIF	Jan 95*	
<b>Support and Management Organizations</b>			
PM office support			
Matrix support			
Misc Contracts			
<b>Test and Evaluation Organizations</b>			
OGA	MIPR		
*FY 97-98 funded under 0203758A, project D374			
<b>Government Furnished Property: Not applicable</b>			
Subtotal Product Development			
Subtotal Support and Management			
Subtotal Test and Evaluation			
Total Project			

Item 147

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

Item 147

1377

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		16640	43126	99528	99421	99345	99244	99362	Continuing	Continuing	
D394 Force XXI Warfighter Rapid Acquisition Program (WRAP)		0	37700	99528	99421	99345	99244	99362	Continuing	Continuing	
D399 Striker (WRAP)		5600	3779	0	0	0	0	0	0	9500	
D414 Integrated Combat Services Support Systems Radio Frequency Data Tags (WRAP)		1700	1647	0	0	0	0	0	0	3400	
D406 Gun Laying Positioning System (WRAP)		3500	0	0	0	0	0	0	0	3500	
D416 Avenger Slew-To-Cue (WRAP)		5840	0	0	0	0	0	0	0	5840	

**Mission Description and Budget Item Justification:** Force XXI Initiatives (Warfighting Rapid Acquisition Program) continues as one of the Army's successful Acquisition Reform initiatives. The overall intent of the Force XXI Initiatives is to put proven technologies in the hands of the soldiers sooner while gaining significant time and dollar savings. Candidates considered for funding through this program are compelling, mature technologies capable of achieving a milestone III decision immediately or following one to two years of continued development. Initiatives can originate from virtually anywhere. "Good ideas" continue to emerge from such sources as the Training and Doctrine Command (TRADOC) Centers, Schools and Battle Labs, the user community, the Army Materiel Command (AMC), Research Development & Engineering Centers (RDECs), the Project Manager/Program Executive Officer (PM/PEO) community, industry, Academia, Horizontal Technology Integration (HTI), General Officer Steering Committees (GOSCs), and the Federally Funded Research and Development Centers (FFRDCs). The Army's Advanced Warfighting Experiments (AWE) continue to provide the testing ground of choice for many of these emerging technologies, as in the case of Task Force XXI AWE at the National Training Center, Fort Irwin, California for the FY97 WRAP, and Division XXI AWE at Fort Hood, Texas for the FY98 program.

This program element was established in FY97 to serve as a holding account for all funding appropriated by Congress to support this program, consistent with Congressional language reflected in the Department of Defense Appropriations Bill for FY97. As experienced with the FY97 and FY98 WRAP funding, which required a number of internal realignments of funds for WRAP initiatives associated with on-going programs, execution of FY99 WRAP funding will require reprogramming of funds from this line to other program elements or other appropriations, as deemed appropriate under current congressional or legal constraints. This program element supports upgrades to existing systems and is therefore appropriately placed in Budget Activity 7.

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																																	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																																		
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)								D394																																																		
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																																		
D394	Force XXI Warfighter Rapid Acquisition Program (WRAP)	0	37700	99528	99421	99345	99244	99362	Continuing	Continuing																																																		
<p><b>A. Mission Description and Budget Item Justification:</b> Force XXI Warfighter Rapid Acquisition Program</p> <p><b>Acquisition Strategy:</b> This program serves as a holding account for FY 98 WRAP candidates to be approved by Congress and for initiatives that will be identified in FY99 and beyond, consistent with the WRAP process.</p> <p><b>FY 1997 Accomplishments:</b> Project not funded in FY 97</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 36755 To be reprogrammed to existing Program Elements (PE) and projects upon Congressional approval of WRAP candidates</li> <li>• 945 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Program</li> </ul> <p>Total 37700</p> <p><b>FY 1999 Planned Program:</b> Funds to be reprogrammed to existing Program Elements (PE) and projects upon Congressional approval of WRAP candidates.</p> <p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>38900</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>-1200</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>37700</td> <td>99528</td> </tr> </tbody> </table> <p>Change Summary Explanation: Funding: FY98/99 funds reprogrammed from PE 0203758/Proj 376</p> <p><b>C. Other Program Funding Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To Compl</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>Army Airborne Command &amp; Control System (A2C2s)- PE 0604201.DC97</td> <td>3400</td> <td>11000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>14400</td> </tr> <tr> <td>Palletized Load System-Enhanced (PLSE)- PE 0604622.659</td> <td>3000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>3000</td> </tr> </tbody> </table>												FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	0	0	0	Appropriated Value	0	38900		Adjustments to Appropriated Value	0	-1200		FY 1999 President's Budget	0	37700	99528		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	Army Airborne Command & Control System (A2C2s)- PE 0604201.DC97	3400	11000						0	14400	Palletized Load System-Enhanced (PLSE)- PE 0604622.659	3000							0	3000
	FY 1997	FY 1998	FY 1999																																																									
FY 1998/1999 President's Budget	0	0	0																																																									
Appropriated Value	0	38900																																																										
Adjustments to Appropriated Value	0	-1200																																																										
FY 1999 President's Budget	0	37700	99528																																																									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																																																			
Army Airborne Command & Control System (A2C2s)- PE 0604201.DC97	3400	11000						0	14400																																																			
Palletized Load System-Enhanced (PLSE)- PE 0604622.659	3000							0	3000																																																			

Project D394

Page 2 of 14 Pages

Exhibit R-2 (PE 0203761A)

1379

Item 148

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT	
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)				D394	
<u>C. Other Program Funding Summary</u>		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>
Mortar Fire Control System (MFCS)- PE 0604802.D613		5000	10000				
LightWeight Laser Designator RangeFinder (LLDR)-PE 0604710.L70		5000	2800				
Applique - PE 0203758.374		4300	2600				
Tactical Internet - PE 0203758.374		8000	6000				
Combat Synthetic Training Assessment Range (CSTAR)-PE 0604715.241		1116	5414				
Palletized Load System-Enhanced (PLSE)Other Procurement, A			3000				
						<u>To</u>	<u>Total</u>
						<u>Compl</u>	<u>Cost</u>
						0	15000
						0	7800
						0	6900
						0	14000
						0	6530
<u>D. Schedule Profile:</u> Not applicable.							
Project D394		Page 3 of 14 Pages				Exhibit R-2 (PE 0203761A)	

Item 148

1380

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																			
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																				
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)								D399																				
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
D399 Striker (WRAP)		5600	3779	0	0	0	0	0	0	9500																				
<p><b>A. Mission Description and Budget Item Justification:</b> The Striker support vehicle integrates the same modern Bradley Fire Support Vehicle (BFIST) Mission Equipment Package into a High Mobility Multi-purpose Wheeled Vehicle (HMMWV) chassis. Specifically, the program provides the Combat Observation Lasing Teams (COLT), both heavy and light, with unprecedented mobility, flexibility, stealth and a highly automated targeting/C3 package.</p> <p><b>Acquisition Strategy:</b> Use of existing contract for Engineering and Manufacturing Development (EMD)</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 5000 EMD contract</li> <li>• 600 Management Organization</li> <li>Total 5600</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 3685 Continuc EMD</li> <li>• 94 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs</li> <li>Total 3779</li> </ul> <p><b>FY 1999 Planned Program:</b> Project not funed in FY 99</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>3900</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>5600</td> <td>-121</td> <td></td> </tr> <tr> <td></td> <td>5600</td> <td>3779</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: FY98 - Funds reprogrammed from 0203758A/Proj 374</p> <p><b>C. Other Program Funding Summary</b> Not applicable</p> <p><b>D. Schedule Profile:</b> Not applicable</p>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	0	Adjustments to Appropriated Value	0	3900		FY 1999 President's Budget	5600	-121			5600	3779	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																											
Appropriated Value	0	0	0																											
Adjustments to Appropriated Value	0	3900																												
FY 1999 President's Budget	5600	-121																												
	5600	3779	0																											

Project D399

Page 4 of 14 Pages

Exhibit R-2 (PE 0203761A)

1381

Item 148

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
7 - Operational System Development	0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)			February 1998	D399
<b>A. Project Cost Breakdown</b>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>		
EMD Contract with SEI	5600				
Additional Contract for EMD with SEI		700			
Testing Requirements		1479			
Contractual STS Efforts with SEI		800			
Purchase of Equipment to support testing/experimentation		400			
Government support to contract		400			
Total	5600	3779	0		
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or Contract	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
Method/Type					
Award or Obligation					
Date					
Performing Activity					
EAC					
<b>Product Development Organizations</b>					
Sys Elec Inc (SEI)		0	3736		3736
CPAF			1264	3179	4443
CPAF					
<b>Support and Management Organizations</b>					
TACOM			600	600	1200
<b>Test and Evaluation Organizations: Not applicable</b>					
<b>Government Furnished Property: Not applicable</b>					
Subtotal Product Development			5000	3179	8179
Subtotal Support and Management			600	600	1200
Subtotal Test and Evaluation					
Total Project			5600	3779	9379

Project D399

Page 5 of 14 Pages

Exhibit R-3 (PE 0203761A)

1382

Item 148

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																	
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)								D414																																	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																	
D414	Integrated Combat Services Support Systems Radio Frequency Data Tags (WRAP)	1700	1647	0	0	0	0	0	0	3400																																	
<p><b>A. Mission Description and Budget Item Justification:</b> Radio Frequency Tags/Interrogators provide total asset visibility/in-transit capability to units and managers. RF Tags are fixed to containers to provide the ability to track materiel through the distribution system. RF Tags have embedded data of container contents, shipment data and vehicle identification. Interrogators provide passive tracking of RF Tags.</p> <p><b>Acquisition Strategy:</b> Not applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>1700 Initiated Global Combat Support System-Army (GCSS-Army), formerly ICS3, RF Tag Integration effort</li> </ul> <p>Total 1700</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1606 Integrate RF technology into GCSS-Army for supply and ammunition for passing of information through maintenance and management modules.</li> <li>41 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs</li> </ul> <p>Total 1647</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 99</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>1700</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-53</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>1647</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: Funds reprogrammed from PE 0203758A/Proj 376</p> <p><b>C. Other Program Funding Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>To Compl</td> <td>Total Cost</td> </tr> <tr> <td>1200</td> <td>1172</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>Radio Frequency Data Tags (Other Proc, A)</p> <p>Project D414</p> <p>Page 6 of 14 Pages</p> <p>Exhibit R-2 (PE 0203761A)</p>											FY 1997	FY 1998	FY 1999	0	0	0	Appropriated Value	1700		Adjustments to Appropriated Value	-53		FY 1999 President's Budget	1647	0	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	1200	1172							
FY 1997	FY 1998	FY 1999																																									
0	0	0																																									
Appropriated Value	1700																																										
Adjustments to Appropriated Value	-53																																										
FY 1999 President's Budget	1647	0																																									
FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																																			
1200	1172																																										

1383

Item 148

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)	D414	
<p>D. <u>Schedule Profile</u>: Not applicable</p>			
Project D414		Exhibit R-2 (PE 0203761A)	

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)	D414	
<b>A. <u>Project Cost Breakdown</u></b>			
Contract for the development/integration and testing	FY 1997	FY 1998	FY 1999
Additional contract to continue integration effort	1700	1647	
Total	1700	1647	0
<b>B. <u>Budget Acquisition History and Planning Information:</u> Not applicable</b>			
Project D414		Exhibit R-3 (PE 0203761A)	

Page 8 of 14 Pages

Item 148

1385

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998																																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																						
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)								D406																																						
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																						
D406 Gun Laying Positioning System (WRAP)		3500	0	0	0	0	0	0	0	0	3500																																					
<p><b>A. Mission Description and Budget Item Justification:</b> The Gun Laying Positioning System (GLPS) is a tripod mounted positioning and orienting device consisting of a non-developmental item (NDI) gyroscope, electronic theodolite, Precision Lightweight Global positioning System (GPS) receiver, and a short-range, eye-safe laser range-finder. GLPS will provide non-Paladin artillery forces with capability to determine location and provide timely, accurate fire support.</p> <p><u>Acquisition Strategy:</u> Not applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2431 Acquisition of 21 test articles</li> <li>• 1069 Developmental test / Operational Test - June 1998</li> </ul> <p>Total 3500</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 98</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 99</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>3500</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>3500</td> <td>0</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: Funds reprogrammed from 0203758A/proj 374</p> <p><b>C. Other Program Funding Summary</b></p> <table border="0"> <tr> <td></td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>To Compl</td> <td>Total Cost</td> </tr> <tr> <td>Gun Laying Positioning System (Other Proc, A)</td> <td></td> <td></td> <td>5860</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>													FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	0	Adjustments to Appropriated Value	3500			FY 1999 President's Budget	3500	0	0		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	Gun Laying Positioning System (Other Proc, A)			5860						
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																																													
Appropriated Value	0	0	0																																													
Adjustments to Appropriated Value	3500																																															
FY 1999 President's Budget	3500	0	0																																													
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																																							
Gun Laying Positioning System (Other Proc, A)			5860																																													

Project D406

Page 9 of 14 Pages

Exhibit R-2 (PE 0203761A)

1386

Item 148

UNCLASSIFIED



RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## **BUDGET ACTIVITY**

## 7 - Operational System Development

PE NUMBER AND TITLE

**0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)**

## PROJECT

**D406**

### **D. Schedule Profile**

2 3

14

FY 1998

FY 1999

2 3 4

### Developmental Test/Operational Test

Project D406

Page 10 of 14 Pages

Exhibit R-2 (PE 0203761A)

1387

Item 148

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)				
A. Project Cost Breakdown				FY 1997	FY 1998	FY 1999
Product Development				2289		
Support and Management				142		
Test and Evaluation				1069		
Total				3500	0	0
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Method/Type	Award or	Performing			
Government	or Funding	Obligation	Activity			
Activity	Vehicle	Date	EAC			
Product Development Organizations						
Leica Tech, Inc.	FFP ID/IQ	19 Nov 97				
Support and Management Organizations						
ACALA						
Test and Evaluation Organizations						
OPTEC						
Government Furnished Property: Not applicable						
Subtotal Product Development				2289		2289
Subtotal Support and Management				142		142
Subtotal Test and Evaluation				1069		1069
Total Project				3500		3500

Project D406

Page 11 of 14 Pages

Exhibit R-3 (PE 0203761A)

1388

Item 148

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																										
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																											
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)								D416																																											
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																											
D416	Avenger Slew-To-Cue (WRAP)	5840	0	0	0	0	0	0	0	5840																																											
<p><b>A. Mission Description and Budget Item Justification:</b> Digitizes the sensor-to-shooter link, enabling the gunner to quickly acquire and engage a target. Enhances the capability of Avenger to engage targets at maximum range and to engage a higher percentage of targets, especially those of low visibility or of a fleeting nature (e.g. UAVs or cruise missiles).</p> <p><b>Acquisition Strategy:</b> Not applicable</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 5457 Development of Slew-to-Cue Kits</li> <li>• 383 Management Overhead</li> <li>Total 5840</li> </ul> <p><b>FY 1998 Planned Program:</b> Project not funded in FY98-See Other Program Funding Summary</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 99</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>5840</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>5840</td> <td>0</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: Funds reprogrammed from 0203758A.374</p> <p><b>C. Other Program Funding Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>To Compl</td> <td>Total Cost</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="8">Avenger Slew-to-Cue (Missile Proc, A)</td> <td>7200</td> </tr> </table>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	0	Adjustments to Appropriated Value	5840			FY 1999 President's Budget	5840	0	0	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost										Avenger Slew-to-Cue (Missile Proc, A)								7200
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																																																		
Appropriated Value	0	0	0																																																		
Adjustments to Appropriated Value	5840																																																				
FY 1999 President's Budget	5840	0	0																																																		
FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																																													
Avenger Slew-to-Cue (Missile Proc, A)								7200																																													

Project D416

Page 12 of 14 Pages

Exhibit R-2 (PE 0203761A)

1389

Item 148

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
7 - Operational System Development		0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)		D416
<u>D. Schedule Profile</u>				
		FY 1997	FY 1998	FY 1999
	1	2 3 4	2 3 4	2 3 4
Contract Award				
Develop Prototypes			X	
Developmental Tests			X	
Conduct LUT				X
Milestone III				X
Production Contract Award				X

UNCLASSIFIED

**RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

February 1998

PE NUMBER AND TITLE

**D416**

**0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)**

<u>FY 1997</u>	
5457	
383	
5840	

0  
FY 19980  
FY 1999

### B. Budget Acquisition History and Planning Information

## Performing Organizations

Contractor or Contract

Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC
--------------------------------------	--------------------------------------	--------------------------------	-------------------------------

Project Office EAC	Total Prior to FY 1997
--------------------------	------------------------------

FY 1998

**Budget to Complete**

Total  
Program

## Product Development Organizations

Mar 98

## Support and Management Organizations

ATCOM

## Test and Evaluation Organizations

**Government Furnished Property:** Not applicable

Subtotal Product Development

Subtotal Support and Management

### Subtotal Test and Evaluation

Total Project

5457  
383  
5840

5457  
383  
5840

Page 14 of 14 Pages

Exhibit R-3 (PE 0203761A)

1391

Item 148

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
7 - Operational System Development										
0203801A Missile/Air Defense Product Improvement Program										
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	60882	30443	11252	32105	31034	50593	69885	Continuing	Continuing	
D036 PATRIOT Product Improvement Program	45087	21698	9285	8873	7791	5099	5122	48800	474954	
D038 Avenger Product Improvement Program	0	0	0	0	0	2103	0	0	2103	
D303 Stinger RMP Product Improvement Program	15795	8745	1967	23232	23243	42536	61325	Continuing	Continuing	
D633 THAAD P3I	0	0	0	0	0	855	3438	Continuing	Continuing	
<p><b>Mission Description and Budget Item Justification:</b> The changing global threat and the new Army Warfighting Doctrine developed to respond to this changing threat all significantly impact the mission of Air Defense Artillery (ADA). This doctrine calls for U.S. forces to be able to win two nearly simultaneous major regional conflicts and to conduct combat operations characterized by rapid response and a high probability of success while minimizing the risk of significant American casualties. ADA must continually be upgraded and modernized in accordance with the ADA missions. The FY 99 budget funds critical improvements to PATRIOT and Stinger. This project supports development of upgrades to current equipment and is appropriately funded in Budget Activity 7.</p>										

## UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203801A Missile/Air Defense Product Improvement Program								D036	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
COST (In Thousands)											
D036	PATRIOT Product Improvement Program	45087	21698	9285	8873	7791	5099	5122	48800	474954	
<p><b>A. Mission Description and Justification D036 - PATRIOT Product Improvement Program:</b> The PATRIOT system is being upgraded through a series of individual materiel changes (MC) culminating in the attainment of the PATRIOT Advanced Capability - 3 (PAC-3) system. The communication upgrades improve PATRIOT's above and below battalion communication equipment. These changes eliminate PATRIOT peculiar communications equipment and improve PATRIOT's interoperability between systems and between the services.</p> <p><b>Acquisition Strategy:</b> The design objective of the PATRIOT system was to provide a baseline system capable of being modified to cope with the evolving threat. This alternative minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. The PATRIOT program consists of two interrelated acquisition programs - The PATRIOT growth program and the PAC-3 missile program. Growth program modifications are grouped into configurations which are scheduled to be fielded in the same time frame. Configuration groupings are a convenience for managing block changes of hardware and software and are not a performance-related grouping. However, incremental increases in performance will be determined for each configuration in order to provide benchmarks for configuration testing and for the development of user doctrine and tactics.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 5341 P3I test program</li> <li>• 5667 Communications upgrades</li> <li>• 750 Responsive threat analysis</li> <li>• 33329 Anti-Cruise Missile upgrade</li> <li>Total 45087</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 5515 P3I test program</li> <li>• 6198 Communication upgrade</li> <li>• 9473 Anti-Cruise Missile Upgrade</li> <li>• 512 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 21698</li> </ul>											

Project D036

Page 2 of 11 Pages

Exhibit R-2 (PE 0203801A)

1393

Item 149

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203801A Missile/Air Defense Product Improvement Program								D036	
FY 1999 Planned Program:											
• 5899 P3I test program				FY 1997		FY 1998		FY 1999			
• 600 Responsive threat analysis				46280		12388		9474			
• 2786 Horizontal Battlefield Digitization				46280		22388					
Total				-1193		-690					
				45087		21698		9285			
B. <u>Project Change Summary</u>											
FY 1998/1999 President's Budget											
Appropriated Value											
Adjustments to Appropriated Value											
FY 1999 President's Budget											
Change Summary Explanation: Funding: FY 1998: Congressional increase for Patriot Anti-Cruise Missile (+10000); Undistributed Congressional reductions (-690 ).											
C. <u>Other Program Funding Summary</u>											
Missile Procurement, Army											
Budget Activity 3 - PATRIOT Mod (C50700)											
		FY 1997		FY 1998		FY 1999		FY 2000		FY 2001	
		23283		7784		15259		26407		29338	
		FY 1997		FY 1998		FY 1999		FY 2000		FY 2001	
		2		4		1		2		3	
		3		3		3		3		3	
		4		4		4		4		4	
1		3		4		1		2		3	
X*		3		4		1		2		3	
X*		3		4		1		2		3	
D. <u>Schedule Profile</u>											
Post Deploy Build-4 Software Release											
Configuration 2 First Unit Equipped											
Configuration 3 Contractor Development											
Test & Evaluation											
Configuration 3 Initial Operational Test & Evaluation											
PDB-5 Software Release											
PAC-3 FUE											
*Milestone completed.											
Exhibit R-2 (PE 0203801A)											

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										
BUDGET ACTIVITY					PE NUMBER AND TITLE		DATE	PROJECT		
7 - Operational System Development					0203801A Missile/Air Defense Product Improvement Program		February 1998	D036		
A. Project Cost Breakdown					FY 1997	FY 1998	FY 1999			
Contract Engineering Support					40054	14585	3186			
Program Management Support					1399	2581	1922			
Developmental Test and Evaluation					3634	4532	4177			
Total					45087	21698	9285			
B. Budget Acquisition History and Planning Information										
Performing Organizations										
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	
				EAC	EAC					
Product Development Organizations										
Raytheon										
DAAH0182CA181					3722				3722	
DAAH0187CA025					22455				22455	
DAAH0189C0458					23228				23228	
DAAH0192C0036					5000				5000	
Small Contracts					1168				1168	
General Electric										
DAAH0187CA006					4824				4824	
Brunswick Corp.										
DAAH0189C0167					3100				3100	
Martin Marietta										
DAAH0192C0301					3863				3863	
Raytheon										
DAAH0191C0602					23077				23077	
DAAH0192C0006					56460				56460	
DAAH0195C0043					10098	1479	500	400	12477	
Martin Lockheed										
DAAH0196C0406						200	450		650	
Project D036					Page 4 of 11 Pages					Exhibit R-3 (PE 0203801A)

Item 149

1395

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT		
7 - Operational System Development		0203801A Missile/Air Defense Product Improvement Program				February 1998		D036		
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
PAC 2 Anti-Cruise					33183	33329	9473			75985
Raytheon RLCEU						5046	4162		5900	9208
DAAH0196C0018										5900
Link 16/Jt Tac Info										
Dis Sys JTIDS								2786		2786
Horiz Btlfd Digit									56785	56785
Post PBD 5									13000	13000
RAM										
Improvements										
Support and Management Organizations										
CAS, Inc.										
DAAH0187CA008					2270					2270
DAAH0190C0487					6266					6266
DAAH0194C0105	C/CPAF	31Jan94			6135					6135
DAAH0197C0324							1099	791		1890
In-House Support					11327	1399	1482	1131		15339
Test and Evaluation Organizations										
Missile Command	1095				3420	694	1000	700		5814
White Sands										9473
Missile Range	1095/MIPR				4211	1591	1934	1737		
Other Govt Agen	MIPR				4015	1349	1598	1740		8702
RDEC and										
Other Govt Agent					95377					95377
Government Furnished Property: None.										
Project D036						Page 5 of 11 Pages			Exhibit R-3 (PE 0203801A)	

1396

Item 149

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0203801A Missile/Air Defense Product

## Improvement Program

**D036**

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	190178	40054	14585	3186	75685	323688
Subtotal Support and Management	25998	1399	2581	1922		31900
Subtotal Test and Evaluation	107023	3634	4532	4177		119366
Total Project	323199	45087	21698	9285	75685	474954

**UNCLASSIFIED**

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0203801A Missile/Air Defense Product Improvement Program								D303	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D303 Stinger RMP Product Improvement Program		15795	8745	1967	23232	23243	42536	61325	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification:</b> This project provides a product evolution of the STINGER-RMP to improve countermeasures capability via externally loaded software, which is downloaded from a reprogrammable module. This concept allows for timely upgrades to correct system deficiencies, rapid reaction to new threats or threat countermeasures, development of specialty software programs where full capability may not be desired, and accommodation of new missions. The Block I upgrade project, which adds a roll sensor and enhanced software, extends the missile service life, solves the recognized system-performance deficiencies in countermeasures and other engagement conditions, and increases terminal accuracy. The Block II program is a development of an advanced infrared (IR) Focal Plane Array Seeker which improves the performance of the missile against an expanded target and in background clutter. The program develops the improved missile for adaptation to any or all of the STINGER firing platforms, extends the missile service life and establishes a government post deployment software support posture. The Block II engineering, manufacturing and development (EMD) program provides for development to a performance specification, design qualification of guidance section conducted as part of the production qualification, and platform integration. Funds also develop MIL-STD 1760 launcher electronics to be fielded with the Apache Longbow Helicopter air-to-air requirements, based on Joint Service (U.S. Air Force and U.S. Army) doctrine. The air-to-air requirement satisfies three tasks: self-protection, protect force, and augmentation of air defense forces. Funding also supports an eight nation Memorandum of Understanding (MOU) signed by the Office of Secretary of Defense in 1994 for the conduct of a two-year competitive feasibility study on NATO Very Short Range Air Defense Systems (VSHORADS) and Short Range Air Defense Systems (SHORADS); this will form the basis for the development of a VSHORADS/SHORADS NATO Staff Requirement and information to support the development of a follow-on system to STINGER.</p> <p><b>Acquisition Strategy:</b> The Block I development program is a SS/CPPIF contract awarded in 1992. The Block II development began FY 1993 as Technology Base Broad Agency announcement with a SS/CPPIF contract. Current SS/CPPIF contract awarded 1996 for pre-EMD, EMD start FY 2000, MS IIIa FY 2005, and FUE FY 2007. A SS/CPPIF contract for MIL-STD Launcher electronics development was awarded mid-FY 1997. The VSHORADS/SHORADS Competitive/Firm Fixed Price contract was awarded to two international consortia; the United Kingdom was designated as the Pilot Nation, serving as contracting authority.</p>											

Project D303

Page 7 of 11 Pages

Exhibit R-2 (PE 0203801A)

1398

Item 149

## UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY		February 1998	D303
7 - Operational System Development		PE NUMBER AND TITLE	0203801A Missile/Air Defense Product Improvement Program
<p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>702 Completed Block I Performance Assessment</li> <li>3898 Produced Prototype Block II Electronics State of the Art Packaging (Miniaturization) of Electronics Section</li> <li>930 Designed and Packaged Block II Control Section</li> <li>4811 Integration of Block II Tactical-sized Guidance Assembly</li> <li>2191 Performed Evaluation of Block II Guidance Assembly</li> <li>2202 VSHORADS/SHORADS System Variants Development and Evaluation of System Variants</li> <li>1061 Continued Development of MIL-STD 1760 Launcher Electronics</li> <li>Total 15795</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2865 Finalize Block II Packaging; Fabricate and Assemble Three Tactical size Guidance Sections</li> <li>1464 Integrate Guidance Assembly with Control Section</li> <li>1588 Block II Airframe Dynamic Analysis, Tests, Performance Prediction</li> <li>759 Telemetry Unit Design</li> <li>200 Target Acquisition Sensor Study</li> <li>1650 Complete VSHORADS/SHORADS Feasibility Study and Forward NATO Staff Requirement</li> <li>219 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 8745</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>735 Design/Fabricate/Evaluate Three Block II Launch Tube and End Cap Units</li> <li>840 Continue Hardware-in-the-Loop Flight Simulations</li> <li>392 Telemetry Unit Design; Performance Prediction; Preparation for Entry into EMD</li> <li>Total 1967</li> </ul>			
Project D303		Page 8 of 11 Pages	Exhibit R-2 (PE 0203801A)

Item 149

1399

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (P-2 Exhibit)

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

**0203801A Missile/Air Defense Product Improvement Program**

## PROJECT

**D303**

### **B. Project Change Summary**

### FY 1998/1999 President's Budget

Appropriated Value

### Appropriated Value Adjustments to Appropriated Value

## FY 1999 President's Budget

FY 1997

18277

18277

-2482

FY 1999

1957

Change Summary Explanation: Funding: FY 1997: Reprogrammed to higher priority requirements (-2482). FY 1998: Congressional increase (+4,000) and undistributed Congressional reductions (-279K).

### **C. Other Program Funding Summary**

Missile Procurement, Army

Budget Activity 3 - Stinger Mods (C21300)

Budget Activity 3 - BSFV-E Mods (C21500)

FY 1997

\_\_\_\_\_

37184

40115

#### D. Schedule Profile

## Block I Performance Assessment

## Initiate Block II Guidance Section

## Integration Design

## Complete Block II Tactical Size

Electronic Products

# Electronics Complete Block II Guidance

## Section Integration Design

## Section Integration of Guidance

## Hardware with Simulation

**\*Milestone completed**

Project D303

Page 9 of 11 Pages

Exhibit R-2 (PE 0203801A)

1400

Item 149

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE	
7 - Operational System Development				0203801A Missile/Air Defense Product Improvement Program	D303
<b>A. Project Cost Breakdown</b>					
Project Management In-House	FY 1997	FY 1998	FY 1999		
Res Dev & Eng Cmd (RDEC) Engineering Support	1071	439	75		
Major Development Contractor	2616	439	159		
Contracted Services	9396	5726	1733		
Other Government Agencies	60	200			
UK MOU Contractor	450	380			
UK Management Office	1732	1168			
UK MOU U.S. Program Support	176	29			
	294	364			
Total	15795	8745	1967		
<b>B. Budget Acquisition History and Planning Information</b>					
Contractor or Government	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
Performing Activity	EAC	FY 1997			
Method/Type or Funding Vehicle	Performing Activity	EAC			
Award or Obligation Date					
<b>Product Development Organizations</b>					
Block I Dev	Various	30937	30		30937
Block II PDRR	Various	6775	30		8538
DAAH0196C0180	SS-CPFF Mar 96	6750	7496	5426	19672
DAAH0197C0099	SS-CPFF Jul 97		900	300	1200
SUE Dev	Various	102	1000		1102
BSFV Prior	Various	7025			7025
PMO/RDEC	Allot/1095	3155	3687	878	7954
Other Govt Agen	MIPR	42	450	380	872
Blk II EMD 00-05	TBD				Cont'd
Future SHORAD	TBD				Cont'd
British Aerospace	C-FFP Jul 96	322	866	584	1772
Thomson-CSF	C-FFP Aug 96	321	866	584	1772

Project D303

Page 10 of 11 Pages

Exhibit R-3 (PE 0203801A)

1401

Item 149

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE					D303		
7 - Operational System Development					0203801A Missile/Air Defense Product Improvement Program							
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
UK Ministry of Defense (Mgt Ofc)	MOU/1095	Dec 95	EAC	EAC	106	176	29			2311		
Support and Management Organizations												
DLA90093D0011	SS-FFP	Aug 96			575		200			775		
U.S. Prog Spt	1095	Dec 95			291	294	364			949		
MOU VSHORAD/SHORADS												
Test and Evaluation Organizations: None												
Government Furnished Property: Not applicable												
Subtotal Product Development					55505	15501	8181	1967	Cont'd	Cont'd		
Subtotal Support and Management					866	294	564			1724		
Subtotal Test and Evaluation												
Total Project					56371	15795	8745	1967	Cont'd	Cont'd		

Project D303

Page 11 of 11 Pages

Exhibit R-3 (PE 0203801A)

Project D303

Page 11 of 11 Pages

Exhibit R-3 (PE 0203801A)

1402

Item 149

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

1403

Item 149

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

## 0203802A Other Missile Product Improvement

### Programs

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13570	1216	1248	0	47806	85188	76489	126590	1244316
D045 HELLFIRE Product Improvement Program	3717	0	0	0	0	23427	18983	0	505866
D2MT ATACMS BLK IA Oper Tests	212	0	0	0	0	0	0	0	3609
D304 Army TACMS BLK IA	8965	0	0	0	0	0	0	0	92699
D336 TOW Product Improvement Program	676	1216	1248	0	0	0	0	0	348479
D689 ATACMS BLK IIIB	0	0	0	0	36240	42608	45965	111918	236731
D785 Longbow HELLFIRE PIP	0	0	0	0	11566	19153	11541	14672	56932

**Mission Description and Budget Item Justification:** Expanding regional power threats require an evolutionary improvement program to maintain the effectiveness of the HELLFIRE, Army TACMS, TOW and Hydra 70 Systems. The HELLFIRE PIP funding was utilized to conduct component qualification tests (CQT) of the HELLFIRE II insensitive munitions (IM) rocket motor under various environments and for product improvements to the Laser HELLFIRE Missile Systems such as countermeasure improvements to respond to changing threats, air-to-air capability improvements, a multi-mode warhead (shaped charge/blast fragmentation), IFF capability, increased field of view and target acquisition range, and development of mission specific rocket motors such as a short range training motor and an extended range boost sustain rocket motor. The Longbow HELLFIRE PIP consists of the Longbow HELLFIRE Home-on-Jam (HOJ) and Counter-Active Protection System (CAPS) improvements. The Longbow HELLFIRE missile provides a fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system is employable by day or night, in adverse weather, and in countermeasures environment. The HOJ and CAPS objective is to maintain the Longbow missile's low vulnerability and susceptibility to existing and future battlefield jammer threats and "hard kill" Active Protection System (APS) threats. The Army TACMS Block IA development effort integrated Global Positioning System (GPS) technology into the guidance system of the Army TACMS Block I missile to provide more accurate information for orientation of the missile in position and azimuth. The payload quantity of M74 anti-personnel/anti-materiel (APAM) bomblets will be reduced resulting in a range approximately twice that of the current Block I missile. The inherent GPS accuracies will be achievable independent of range, thereby enhancing system performance. These funds also supported participation by Block IA prototype missiles in the Joint Precision Strike Demonstration (JPSD). The Army TACMS IIIB will achieve ranges of approximately one and one-half times that of the Army TACMS Block IA and will employ an earth penetrator warhead designed to neutralize "Hard and Deeply Buried Targets". These target sets might include underground chemical warfare and munitions storage sites, underground command and control facilities, or surface-to-surface missile storage and assembly areas. Project D2MT provided for the operational testing of the Army TACMS Block IA Program. The TOW PIP provides advances in the day/night sight

Exhibit R-2 (PE 0203802A)

Page 1 of 16 Pages

1404

Item 150

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>
BUDGET ACTIVITY <b>7 - Operational System Development</b>	PE NUMBER AND TITLE <b>0203802A Other Missile Product Improvement Programs</b>	
<p>improvements, fire control and missile improvements. Improvements are required to maintain the infantry's capability to support the US Army mission of crisis response to regionally based threat and allows for TOW to continue to be integral to the strategic principle of forward presence. Included in this PIP are missile improvements to include a lethality effort against new/evolving threats and the Improved Target Acquisition System (ITAS). The ITAS is a technology insertion program using Second Generation Forward Looking Infrared (FLIR) technology to upgrade the current TOW Target Acquisition and Fire Control subsystems. These projects support development of upgrades to current production vehicles and are appropriately funded in this budget activity, 7.</p>		
Page 2 of 16 Pages		Exhibit R-2 (PE 0203802A)

Item 150

1405

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																	
7 - Operational System Development		0203802A Other Missile Product Improvement Programs								D045																																	
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																	
D045 HELLFIRE Product Improvement Program		3717	0	0	0	0	23427	18983	0	505866																																	
<p><b>A. Mission Description and Budget Item Justification:</b> Project D045- HELLFIRE Product Improvement Program: The Army intends to use funding to conduct component qualification tests (CQT) of the HELLFIRE II insensitive munitions (IM) rocket motor under various environments. The new IM rocket motors will be much less susceptible to catastrophic failure from external stimuli such as bullet impact, fire, fragment impact and sympathetic detonation. CQTs of the IM rocket motors are to demonstrate, meet specifications, safety and IM requirements.</p> <p><b>Acquisition Strategy:</b> Awarded the HELLFIRE II Insensitive Munitions rocket motor Letter Contract (Cost Plus Fixed Fee) in FY 1997.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 3400 IM rocket motor contract</li> <li>• 317 In-house support</li> </ul> <p>Total 3717</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>3818</td> <td>0</td> <td>0</td> </tr> <tr> <td>3818</td> <td></td> <td></td> </tr> <tr> <td>-101</td> <td></td> <td></td> </tr> <tr> <td>3717</td> <td>0</td> <td>0</td> </tr> </table> <p><b>C. Other Program Funding Summary</b></p> <table> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> <td>FY 2000</td> <td>FY 2001</td> <td>FY 2002</td> <td>FY 2003</td> <td>Compl</td> <td>Cost</td> </tr> <tr> <td>107113</td> <td>9546</td> <td>14331</td> <td>2243</td> <td></td> <td></td> <td></td> <td></td> <td>2078793</td> </tr> </table> <p>Missile Procurement, Army C70100 Laser HELLFIRE</p>											FY 1997	FY 1998	FY 1999	3818	0	0	3818			-101			3717	0	0	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl	Cost	107113	9546	14331	2243					2078793
FY 1997	FY 1998	FY 1999																																									
3818	0	0																																									
3818																																											
-101																																											
3717	0	0																																									
FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl	Cost																																			
107113	9546	14331	2243					2078793																																			

Project D045

Page 3 of 16 Pages

Exhibit R-2 (PE 0203802A)

1406

Item 150

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

0203802A Other Missile Product Improvement

## Programs

FY 1997

—

COT

X\*

**X\***

Page 4 of 16 Pages

Exhibit R-2 (PE 0203802A)

Item 150

**UNCLASSIFIED**

**UNCLASSIFIED**

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		0203802A Other Missile Product Improvement Programs		February 1998	D045
<b>7 - Operational System Development</b>					
<b>A. Project Cost Breakdown</b>					
Contractor Testing	FY 1997	FY 1998	FY 1999		
	3400				
In-house	317				
Total	3717	0	0		
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or Government	Method/Type	Award or Obligation	Performing Activity	Project Office	Total
Performing Activity	Vehicle	Date	EAC	EAC	Prior to FY 1997
<b>Product Development Organizations</b>					
HELLFIRE	LC/CPEF	Mar 97	TBD	TBD	FY 1997 FY 1998 FY 1999 Budget to Complete Total Program
Systems Limited Liability					
SBIR/STTR					
PY Sunk Cost					366000
<b>Support and Management Organizations</b>					
In-House Spt					
PY Sunk Cost					317
<b>Test and Evaluation Organizations</b>					
<b>Government Furnished Property: None</b>					
Subtotal Product Development					366000
Subtotal Support and Management					93739
Subtotal Test and Evaluation					317
Total Project					459739
					0
					0
					42410
					505866
Project D045					
Exhibit R-3 (PE 0203802A)					

Page 5 of 16 Pages

1408

**UNCLASSIFIED**

Item 150

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																				
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																					
7 - Operational System Development		0203802A Other Missile Product Improvement Programs								D2MT																					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																					
D2MT	ATACMS BLK IA Oper Tests	212	0	0	0	0	0	0	0	3609																					
<p><b>A. Mission Description and Budget Item Justification:</b> Project D2MT- ATACMS BLOCK 1A Operational Tests: This project finances the direct costs of planning and conducting operational testing and evaluation of the Army Tactical Missile System Block IA system by the Operational Test and Evaluation Command (OPTEC). The Army TACMS is an Acquisition Category (ACAT) I system with a dedicated Initial Operational Test and Evaluation (IOTE) started in FY 96 in support of Milestone III full production decisions. Operational Testing is conducted under conditions similar to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides the Army leadership with independent test and evaluation of system effectiveness and suitability.</p> <p><u>Acquisition Strategy:</u> Not applicable.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 212 Army TACMS Block IA operational testing.</li> </ul> <p>Total 212</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>378</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>378</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>-166</td> <td></td> <td></td> </tr> <tr> <td></td> <td>212</td> <td>0</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: FY 1997 reprogrammed to higher priority requirements (-166).</p> <p><b>C. Other Program Funding Summary :</b> There are no other related RDTE or other Appropriation efforts.</p>												FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	378	0	0	Adjustments to Appropriated Value	378			FY 1999 President's Budget	-166				212	0	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																												
Appropriated Value	378	0	0																												
Adjustments to Appropriated Value	378																														
FY 1999 President's Budget	-166																														
	212	0	0																												

Project D2MT

Page 6 of 16 Pages

Exhibit R-2 (PE 0203802A)

1409

Item 150

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE					PROJECT	
7 - Operational System Development	0203802A Other Missile Product Improvement Programs					D2MT	
<u>D. Schedule Profile</u>	FY 1997	FY 1998	FY 1999				
Complete Army TACMS Block IA	1    2    3    4    1	2    3    4    1	2    3    4				
Operational Testing		X					

Page 7 of 16 Pages  
 Exhibit R-2 (PE 0203802A)

Project D2MT

**UNCLASSIFIED**



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
7 - Operational System Development		0203802A Other Missile Product Improvement Programs		February 1998	D2MT
<b>A. Project Cost Breakdown</b>					
Operational Testing		FY 1997	FY 1998	FY 1999	
Total		212	0	0	
<b>B. Budget Acquisition History and Planning Information:</b>					
<b>Government Furnished Property</b>					
Contract					
Method/Type					
or Funding					
Vehicle					
Award or					
Obligation					
Date					
Delivery					
Date					
Item		Total			
Description		Prior to			
Product Development Property: None		FY 1997	FY 1998	FY 1999	Total
Support and Management Property: None					Program
Test and Evaluation Property					
Misc.		3397	212		3609
Subtotal Product Development					
Subtotal Support and Management		3397	212		3609
Subtotal Test and Evaluation		3397	212	0	3609
Total Project				0	

Project D2MT

Page 8 of 16 Pages

Exhibit R-3 (PE 0203802A)

1411

Item 150

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE																											
BUDGET ACTIVITY		PROJECT																											
7 - Operational System Development		February 1998																											
PE NUMBER AND TITLE		PROJECT																											
0203802A Other Missile Product Improvement Programs		D304																											
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																				
D304 Army TACMS BLK IA	8965	0	0	0	0	0	0	0	92699																				
<p><b>A. Mission Description and Budget Item Justification:</b> Project D304 - ARMY TACMS BLOCK IA: The Army TACMS Block IA development effort integrates Global Positioning System (GPS) technology into the guidance system of the Army TACMS Block I missile to provide more accurate information for orientation of the missile in position and azimuth. The payload quantity of M74 anti-personnel/anti-materiel (APAM) bomblets will be reduced resulting in a range approximately twice that of the current Block I missile. The inherent GPS accuracies will be achievable independent of range, thereby enhancing system performance. Funds also supported participation by Block IA prototype missiles in the Joint Precision Strike Demonstration (JPSD). The Block IA Engineering and Manufacturing Development (EMD) program incorporates the improved guidance capability. The improved missile will destroy high value targets.</p> <p><b>Acquisition Strategy:</b> The Army TACMS Block IA program develops an extended range version of the currently fielded Army TACMS Block I missile. This is achieved by reducing the bomblet payload and adding the Global Positioning System into the guidance to maintain system accuracy. A sole source EMD contract was awarded to Loral (now Lockheed Martin Vought). Low Rate Initial Production (LRIP) began in FY 1996.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2865 Block IA EMD (fourth increment).</li> <li>• 5600 Testing activities, data analysis and reporting (3200 reprogrammed from missile procurement to support testing for survivability &amp; effectiveness).</li> <li>• 500 Studies, development, and validation of future improvement programs.</li> </ul> <p>Total 8965</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>4376</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>4376</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>+4589</td> <td></td> <td></td> </tr> <tr> <td></td> <td>8965</td> <td>0</td> <td>0</td> </tr> </table>										FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	4376	0	0	Adjustments to Appropriated Value	4376			FY 1999 President's Budget	+4589				8965	0	0
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																										
Appropriated Value	4376	0	0																										
Adjustments to Appropriated Value	4376																												
FY 1999 President's Budget	+4589																												
	8965	0	0																										

Exhibit R-2 (PE 0203802A)

Page 9 of 16 Pages

Project D304

Item 150

1412

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0203802A Other Missile Product Improvement Programs

D304

## Change Summary Explanation:

Funding: FY 1997 funding increased by Congressional reprogramming (+3200) and other below threshold reprogrammings (+1389).  
 Schedule: Reference decision by Army Acquisition Executive 22 Apr 97; the Milestone III Decision in 2QFY98 will be contingent upon the Block IA missile satisfying the exit criteria approved at the Milestone IV ASARC in February 1994.

C. Other Program Funding Summary

Missile Procurement, Army

C98501 ATACMS

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
	135311	93537	90585	94635	89907	14992	7299		595299

D. Schedule Profile

Complete PPQT

Complete Block IA EMD

Block IA Milestone III Decision

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	3	4	1	2	3	4
			X*				

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
	2	3	4	1	2	3	4

\*Milestone completed

Project D304

Page 10 of 16 Pages

Exhibit R-2 (PE 0203802A)

1413

Item 150

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			D304
7 - Operational System Development		0203802A Other Missile Product Improvement Programs		
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999
Prime Contractor Activity		1548		
Developmental Test & Evaluation		5600		
Project Management Support		1039		
Project Management Personnel		778		
Total		8965	0	0
B. Budget Acquisition History and Planning Information				
Performing Organizations				
Contractor or Government	Contract Method/Type	Award or Obligation Date	Performing Activity EAC	Total Prior to FY 1997
Performing Activity	Vehicle			FY 1997
Product Development Organizations				FY 1998
Loral Vought Sys	SS/CPIF	Nov 93	8041	FY 1999
Loral Vought Sys	SS/CPIF	Mar 94	54090	
In-House Spt			3913	
Support and Management Organizations				
Sys Eng & Tech				
Asst Contracts and Program Mgt				
In-House Spt				
Test and Evaluation Organizations: None				
Government Furnished Property				
Contract				
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997
Product Development Property: None				FY 1997
Support and Management Property: None				FY 1998
				FY 1999
				Budget to Complete
				Total Program
				8041
				53919
				4452
				1825
				6402

Exhibit R-3 (PE 0203802A)

Page 11 of 16 Pages

Project D304

Item 150

1414

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE		D304
7 - Operational System Development				0203802A Other Missile Product Improvement Programs		
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	FY 1997	FY 1998	FY 1999
Total Prior to FY 1997					Budget to Complete	Total Program
Test and Evaluation Property						
White Sands	MIPR			9077	1013	10090
Missile Range (WSMR)						
Range Support	MIPR			131	0	131
Redstone	MIPR			650	0	650
Technical Test Center (RTTC)						
Army Research Laboratory (ARL)	MIPR			1053	4244	5297
Misc.	MIPR			1549	343	1892
Subtotal Product Development				64325	2087	66412
Subtotal Support and Management				6949	1278	8227
Subtotal Test and Evaluation				12460	5600	18060
Total Project				83734	8965	92699
					0	0

Project D304

Page 12 of 16 Pages

Exhibit R-3 (PE 0203802A)

1415

Item 150

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0203802A Other Missile Product Improvement

D336

Programs

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D336 TOW Product Improvement Program	676	1216	1248	0	0	0	0	0	348479

**A. Mission Description and Budget Item Justification:** Project D336 -TOW Product Improvement Program: Provides for continued development of improvements to the TOW missile system. Improvements are required to maintain the Infantry's capability to support the US Army mission of crisis response to regionally based threats and allow TOW to continue to be integral to the strategic principle of forward presence. Included in this PIP are missile improvements (seeker, lethality, aerodynamics, guidance, control, reduced missile time of flight), and Improved Target Acquisition System (ITAS). The ITAS increases the capability of the TOW Heavy Antitank Weapon System by providing improved target detection and acquisition range, improved probability of hit, enhanced fire control capabilities and improved logistics supportability through modular design and extensive built-in test/built-in test equipment. ITAS contains the Army's pathfinder common components for its Second Generation FLIR, sustains concurrent common components production with Improved Bradley Acquisition System (IBAS) and is a baseline platform for the Follow-on to TOW (FOTT). The ITAS design provides simple growth potential for digitization applications and upgrades the anti-armor capability of light forces using the TOW System.

**Acquisition Strategy:** The ITAS is a technology insertion program utilizing Second Generation FLIR technology to upgrade the current TOW Target Acquisition and Fire Control subsystems. The 2<sup>nd</sup> Low Rate Initial Production (LRIP) contract will be awarded sole source to the EMD contractor in FY 98. First Full Rate Production (FRP) contract will be awarded in FY 99.

**FY 1997 Accomplishments:**

- 121 Completed ITAS Perf Spec/Develop ITAS Indoor Trainer
- 555 Continued missile enhancement efforts against the evolving threat [to include Counter Active Protection System (CAPS)]
  - Developed analytical/simulation model
  - Designed long stand-off warhead
  - Designed electrical active/passive measures
  - Designed/developed adaptive warheads for target variety

Total 676

**FY 1998 Planned Program:**

- 752 Continue EMD efforts on ITAS Indoor Trainer
- 443 Continue missile enhancement efforts against the evolving threat [to include Counter Active Protection System (CAPS)]
  - Update analytical/simulation model based on latest intelligence reports
  - Design/test long stand-off warhead

Project D336

Page 13 of 16 Pages

Exhibit R-2 (PE 0203802A)

1416

Item 150

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE		D336
7 - Operational System Development				0203802A Other Missile Product Improvement Programs		
<b>A. Project Cost Breakdown</b>				FY 1997	FY 1998	FY 1999
Primary Hardware Development				198	160	291
Program Management Support				112	283	139
Developmental Test and Evaluation				265		616
Training Development				101	752	202
SBIR/STTR					21	
Total				676	1216	1248
<b>B. Budget Acquisition History and Planning Information</b>						
<b>Performing Organizations</b>						
Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1997	Budget to Complete FY 1999
Activity					FY 1997	FY 1998
<b>Product Development Organizations</b>						
PY Sunk Cost				60640	145427	145427
Texas Instruments, McKinney, TX	C/CPI/AF	Apr 93			59724	59724
STRICOM, Orlando, FL	MIPR	Sep 93			9128	9128
Misc.	TBD	TBD			2986	912
<b>Support and Management Organizations</b>						
PY Sunk Cost					46912	4690
PM CCAWS, RSA	PO				2772	46912
MICOM, RSA, AL	PO				14653	2856
Misc.	TBD				2683	15103
<b>Test and Evaluation Organizations</b>						
PY Sunk Cost					42221	2683
TECOM, APG, MD	PO				15836	42221
TECOM, Ft Bliss, TX	MIPR				1557	16452
Misc.	TBD				1440	1557
					265	1726
					21	
Project D336				Page 15 of 16 Pages		Exhibit R-3 (PE 0203802A)

Item 150

1418

UNCLASSIFIED



## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

0203802A Other Missile Product Improvement

**D336**

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	217265	299	912	493		218969
Subtotal Support and Management	67020	112	283	139		67554
Subtotal Test and Evaluation	61054	265	21	616		61956
Total Project	345339	676	1216	1248	0	348479

Page 16 of 16 Pages

Exhibit R-3 (PE 0203802A)

Item 150

**UNCLASSIFIED**

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0208010A Joint Tactical Communications Program (TRI-TAC)								D107	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D107	Echelons Above Corps (EAC) Comm	17747	21105	35941	19071	20431	8119	8127	122300	316633	
<p><b>A. Mission Description and Budget Item Justification:</b> A requirement exists to automate Signal Corps unit's capability to manage multiple tactical communications systems in support of battlefield operations. The Integrated System Control (ISYSCON) facility will provide automated, integrated management of the tactical communications network, establish an interface with each technical control facility in the Army Tactical Command and Control System (ATCCS) architecture, and enable automation assisted configuration and management of a dynamic battlefield. ISYSCON is being developed in an evolutionary manner with incremental software releases. A change to the requirements document has added planning and management of satellite resources as a requirement. The ISYSCON has been selected as the baseline for network management system for joint task force use. The Battlefield Spectrum Management (BSM) software has been designated as part of the migration system for DOD use. The ISYSCON Program serves as a baseline foundation to support future network management initiatives tied to and part of the evolution to the Digitized Division and the WIN Architecture. ISYSCON is also being extended to manage the Tactical Internet at brigade and battalion levels. FY 1999 supports the development of software (P1, P2, P3), supports IOT&amp;E, and supports releases. This program element also supports any development required for PM, Joint Tactical Area Communications System (JTACS) Area Common User Systems (ACUS). This program is assigned to Budget Activity 7 since it includes those development projects, in support of a development acquisition program or upgrades, still in engineering and manufacturing development but which have received approval for production through DAB or other action, or production funds have been included in the DOD budget submission for the budget or subsequent fiscal year.</p> <p><b>Acquisition Strategy:</b> A competitive Engineering &amp; Manufacturing Development (EMD) contract was awarded to GTE in Sep 92. An IOT&amp;E is scheduled for 2QFY98.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 5197 Participated in the Army Warfighter Experiment (AWE) Exercise</li> <li>• 1500 Participated in Division AWE Ramp Up</li> <li>• 2000 Supported 3<sup>rd</sup> Sig Brigade Field Exercises in preparation for Initial Operational Test &amp; Evaluation (IOT&amp;E)</li> <li>• 1500 Completed Battlefield Spectrum Mgmt (BSM) Module for integration into IOT&amp;E Baseline</li> <li>• 550 Conducted Developmental Progress Review (DPR) for IOT&amp;E Baseline</li> <li>• 3000 Completed Systems Design for IOT&amp;E Software Baseline</li> <li>• 4000 Conducted Software Coding for IOT&amp;E Baseline</li> <li>Total 17747</li> </ul>											

Project D107

Page 1 of 4 Pages

Exhibit R-2 (PE 0208010A)

1420

Item 151

## UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0208010A Joint Tactical Communications Program (TRI-TAC)	D107	
FY 1998 Planned Program:			
	2500	Conduct Unit Test, System Test for IOT&E Baseline	
	1700	IOT&E Training and Test Conduct Support	
	2500	Initial Migration to COE Compliance	
	1200	Div XXI AWE support	
	2018	Develop Initial First Digitized Division(FDD) Dynamic Management Capabilities	
	1002	Conduct DPR for P2 Baseline (increment 1&2)	
	2087	Conduct System Design for P1 Baseline	
	7880	Conduct Software Coding for P2 Baseline (increment 1&2)	
	218	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)	
Total	21105		
FY 1999 Planned Program:			
	1500	Continue Software Coding for P2 Baseline	
	2000	Conduct Unit Test, System Test for P2 Baseline	
	941	P2 Software Release	
	1200	Conduct P2 FOT&E Training/Test Conduct Support	
	2500	Enhanced migration to COE Compliance	
	1800	Complete System Design for P2 Baseline (increment 3,4, &5)	
	4200	Conduct Software Coding for P2 (increment3,4, &5)	
	1500	Conduct Unit Test, System Test for P2(increment 3,4, &5)	
	9300	Integrate FDD-B2 Software coding for Dynamic Management Capabilities	
	4500	Develop Enhanced FDD(WIN-T) Dynamic Management Capabilities	
	1600	Conduct DPR for P2 Baseline (increment 3,4 &5)	
	600	Conduct P3 DPR	
	2200	Complete System Design for P3	
	2100	Conduct Software Coding for P3	
Total	35941		

Project D107

Page 2 of 4 Pages

Exhibit R-2 (PE 0208010A)

Project D107

Page 2 of 4 Pages

Exhibit R-2 (PE 0208010A)

1421

Item 151

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
<b>7 - Operational System Development</b>		<b>0208010A Joint Tactical Communications Program (TRI-TAC)</b>	<b>D107</b>
<b>B. Project Change Summary</b> FY 1998/1999 President's Budget Appropriated Value Adjustments to Appropriated Value FY 1999 President's Budget		FY 1997 18229 18693 -946 17747  FY 1998 8983 8983 +12122 21105  FY 1999 9941  35941	
Change Summary Explanation: Funding: FY1998(+12122) ISYSCON development for FDD. Represents Congressional approval of Army's emergency reprogramming request for Digitization.  FY1999(+26000) Funding increase supports ISYSCON development required to meet the Army's digitization plans and schedule for FDD and beyond.			
<b>C. Other Program Funding Summary</b> Other Procurement, Army-2, BX0007		FY 1997 2674  FY 1998 10333  FY 1999 34175  FY 2000 16049  FY 2001 26549  FY 2002 10700  FY 2003 3000  Total Cost 116246	
<b>D. Schedule Profile</b> IOT&E Software DPR IOT&E P2 Software DPR FOT&E		FY 1997 2 3 X*  FY 1998 4 1 2 3 4 X* X  FY 1999 2 3 4 X X  FY 2000 1 2 3 4 X X  FY 2001 1 2 3 4 X X  FY 2002 2 3 4 X X  FY 2003 3 4 X X	
*Milestone Completed			

Project D107

Page 3 of 4 Pages

Exhibit R-2 (PE 0208010A)

1422

Item 151

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY			
7 - Operational System Development			D107
PE NUMBER AND TITLE			
0208010A Joint Tactical Communications Program (TRI-TAC)			
	FY 1997	FY 1998	FY 1999
A. <u>Project Cost Breakdown</u>			
Software Development (Contractor)	16184	17970	31337
Contractor Engineering Support	439	1431	3046
Government Engineering Support	923	1193	1232
Program Management Support	201	293	326
SBIR/STTR		218	
Total	17747	21105	35941
B. <u>Budget Acquisition History and Planning Information:</u> Not applicable			

Project D107

Page 4 of 4 Pages

Exhibit R-3 (PE 0208010A)

1423

Item 151

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0208053A Joint Tactical Ground Station (TIARA)								M635	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
M635 Joint Tactical Ground Station P31 (TIARA)		2022	5001	12229	29034	6551	5468	3232	0	63537	
<p><b>A. Mission Description and Budget Item Justification:</b> This program supports development of critical improvements to the Joint Tactical Ground Station (JTACS) program. JTACS was designed as a quick response non-developmental item (NDI) acquisition to satisfy critical in-theater deficiencies in Tactical Ballistic Missile (TBM) warning and cueing. JTACS is designated the in-theater element of the United States Space Command's (USSPACECOM) Theater Event System (TES). The objectives of the JTACS critical improvements program are to keep pace with modernization of the Department of Defense (DoD) Defense Support Program (DSP) satellites into the evolving Space Based Infrared System (SBIRS), to retain timely dissemination of TBM launch data through sensor technology advances and to increase the accuracy and timeliness of TBM warning and cueing. This project supports development of upgrades to current production modifications and is appropriately funded in Budget Activity 7.</p> <p><b>Acquisition Strategy:</b> Critical JTACS improvements under this program will be developed making maximum use of NDI/Commercial Off-The Shelf (COTS) elements. After selection and assembly, the modification design will be subjected to thorough integration and performance testing to ensure suitability for procurement. Once approved for procurement, an upgrade package will be procured for each of the 5 tactical units. Application of the upgrades will be accomplished at each of the JTACS operational sites.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>294 Initiated modification to integrate the JTIDS commo net into JTACS.</li> <li>795 Initiated modification to fuse DSP sensor data with data from other battlefield sensors.</li> <li>933 Initiated modification to calibrate sensor via static sources or beacons.</li> </ul> <p>Total 2022</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>782 Complete fusion development.</li> <li>633 Complete beacon development.</li> <li>1461 Continue JTIDS development.</li> <li>2000 Initiate modification for the Phase II (SBIRS) development.</li> <li>125 Small Business Innovation Research/Small Business Technology Transfer Program.</li> </ul> <p>Total 5001</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>75 Complete JTIDS development.</li> <li>25 Prepare for JTIDS Decision Review.</li> <li>12129 Continue SBIRS development.</li> </ul> <p>Total 12229</p> <p>Project M635</p>											

Exhibit R-2 (PE 0208053A)

Page 1 of 4 Pages

1424

Item 152

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

## **BUDGET ACTIVITY**

**PE NUMBER AND TITLE**

## 7 - Operational System Development

**0208053A Joint Tactical Ground Station (TIARA)**

## PROJECT

**M635**

## **B. Project Change Summary**

**FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget**

<u>FY 1997</u>
2077
2124
-102
2022

<u>FY 1998</u>	<u>FY 1999</u>
3195	0
5195	
-194	
5001	12229

**Change Summary Explanation:**

Funding: FY 1998 Congressional increase of 2000 for upgrade of JTAGS to interface with SBIRS followed by a (-194) undistributed Congressional reduction. FY1999 increase (+12229) to continue upgrade of JTAGS to interface with SBIRS.

### **C. Other Program Funding Summary**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
								<u>Compl</u>	<u>Cost</u>
<b><u>C. Other Program Funding Summary</u></b>									
Other Procurement Army, OPA-2									
BZ8420 Joint Tactical Ground Station Mods	0	2827	2638	0	0	0	0	0	5465

#### D. Schedule Profile

	FY 1997
	<b>2      3</b>
<b>D. Schedule Profile</b>	
	<b>1</b>
Initiated JTAGS Modification Program	<b>X</b>
Initiated Sensor Fusion Development	<b>X</b>
Initiated Beacon Development	<b>X</b>
Initiated JTIDS Development	<b>X</b>

	FY 1997	FY 1998	FY 1999
2	4	1	4
3	3	2	1
4	3	3	2
5	3	3	3

Initiated JTIDS Modification Program  
Initiated Sensor Fusion Development  
Initiated Beacon Development  
Initiated JTIDS Development  
Complete Sensor Fusion Development  
Complete Beacon Development  
Initiate SBIRS Development  
Complete JTIDS Development

X  
 X X  
 X

Project M635

Page 2 of 4 Pages

Exhibit R-2 (PE 0208053A)

1425

Item 152

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY					
7 - Operational System Development					
PE NUMBER AND TITLE					
0208053A Joint Tactical Ground Station (TIARA)					M635
<b>A. Project Cost Breakdown</b>					
Prime Contractor	FY 1997	FY 1998	FY 1999		
	607	2358	8470		
Contract Engineering Support	800	558	911		
Program Management Support	517	1742	2110		
Government Engineering Support	98	343	738		
Government Furnished Equipment	0	0	0		
Total	2022	5001	12229		
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
<b>Product Development Organizations</b>					
Aerojet (Prime)	C/CPFF				
Lockheed (Prime)	C/CPAF				
<b>Support and Management Organizations</b>					
Proj Mgt	N/A	N/A			
Contract Eng Spt	C/CPIF	Mar 95			
Govt Eng Spt					
<b>Test and Evaluation Organizations: None</b>					
<b>Government Furnished Property</b>					
Contract					
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	
<b>Product Development Property: None</b>					
<b>Support and Management Property</b>					
To Be Defined					
<b>Test and Evaluation Property: None</b>					
Project M635				Exhibit R-3 (PE 0208053A)	

Page 3 of 4 Pages

1426

UNCLASSIFIED

Item 152



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE		February 1998	
BUDGET ACTIVITY			PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development			0208053A Joint Tactical Ground Station (TIARA)		M635	
Total						
Subtotal Product Development			FY 1997		FY 1998	
Subtotal Support and Management			607		2358	
Subtotal Test and Evaluation			1415		2643	
Total Project			2022		5001	
			FY 1997		FY 1999	
			607		8470	
			1415		3759	
			2022		12229	
			Total		Total	
			FY 1997		Complete	
			607		27317	
			1415		16968	
			2022		44285	
			Total		Total	
			607		38752	
			1415		24785	
			2022		63537	

Project M635

Page 4 of 4 Pages

Exhibit R-3 (PE 0208053A)

1427

Item 152

UNCLASSIFIED

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0303140A Communications Security (COMSEC)

Equipment

	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		3048	11771	7433	7433	8174	9060	9332	Continuing	Continuing
D491 Communications Security Equipment Technology (COMSEC)		2474	8432	6264	6217	6980	7889	8188	Continuing	Continuing
D501 Army Key Management System (AKMS)		574	3339	1169	1216	1194	1171	1144	Continuing	Continuing

**Mission Description and Budget Item Justification:** The Communications Security Equipment Program develops Information Systems Security (ISS) equipment and techniques required to combat threat Signal Intelligence capabilities and to insure the integrity of data network. This program will also develop, integrate, and demonstrate C2 Protect Common Tools into C4I systems that consist of hardware, software, and applications which can manage, protect, detect and react to C2 system vulnerabilities, threats, reconfigurations, and reconstitution. The Army's RDTE ISS program objective is to implement National Security Agency (NSA) developed security technology in Army information systems. The Communications Security Equipment Technology (COMSEC) insures total signals and data security of all Army information systems, to include any operational enhancement and specialized Army configurations. The Army Key Management System (AKMS) automates key generation and distribution while supporting joint interoperability. It provides communications and network planning with key management on a single platform. AKMS is a part of the management/support infrastructure for the Warfighter Information Network (WIN) program. Additional modifications to the AKMS baseline shall be required to support the emerging WIN architecture. System security engineering, integration of available information security (INFOSEC) products, development (when required), and testing are services provided to ensure that C4I systems are protected against malicious or accidental attacks by our enemies or friends. Modeling, simulation, and risk management tools will be used to develop C2 Protect capabilities that will enable the warfighter to distribute complete and unaltered information while maintaining a dynamic, continuous synchronous operational force. Several joint service/NSA working groups exist in the area of key management to avoid duplication and to assure interoperability between all Services' systems to include standards and testing. For the emerging multilevel network security, the Defense Information Systems Agency (DISA) Multi-Level Security (MLS) working group coordinates the Services different technology efforts. The National Security Agency reviews each Service RDT&E program to avoid duplication. These projects support development of upgrades to current production vehicles and are appropriately funded in Budget Activity 7.

Page 1 of 9 Pages

Exhibit R-2 (PE 0303140A)

1428

Item 153

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303140A Communications Security (COMSEC) Equipment								D491	
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D491	Communications Security Equipment Technology (COMSEC)	2474	8432	6264	6217	6980	7889	8188	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification: Project D491 - Communications Security Equipment Technology:</b> Project implements National Security Agency (NSA) developed security technology in Army information systems. Project objectives are to provide systems security mechanisms through encryption, trusted software or standard operating procedures to protect the information and to integrate these mechanisms into specified systems so secure operations are as transparent as possible to the users. This entails performing architecture studies and modeling, development models, system integration and testing, installation kits and certifications and accreditation of Automation Information Systems.</p> <p><b>Acquisition Strategy:</b> Initial Operational Testing and Evaluation (IOTE) for Tactical End-to-End Encryption Device (TEED) will be done during Task Force XXI in FY 97. The Production Milestone decision will be made after the Joint Warfighter Demonstration in Fall FY 97.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>2474 Expanded TEED Internet Security Manager (TISM) to include both FASTLANE and TACLANE Security Management capabilities (TISM is now JOINT Army/NSA Program). Employed TEEDs in various test beds (Task Force XXI, Division XXI, IMETS, Patriot); As part of "electronic operations" to protect Army networks from penetration and exploitation. Investigated and evaluated several COTS products (ISS, Secureware, Intouch, NIDS, Secret Agent). Evaluated Unissued Purge Product to zeroize disk drives of all information.</li> </ul> <p>Total 2474</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>2200 Support NSA TACLANE Program.</li> <li>729 Evaluation of Commercial INFOSEC (COMSEC &amp; COMPUSEC) equipments, evaluation of New COMSEC Chips for embedding and development of new installation kits for TACLANE, complete development efforts on TISM with FASTLANE and TACLANE Security Management capabilities.</li> <li>3061 Initiate development of Common Tools Set for C2 Protect (Information Operations/Warfare) by doing the following:             <ul style="list-style-type: none"> <li>- Investigate and evaluate COTS/GOTS products for Network Access Control</li> <li>- Investigate and evaluate COTS/GOTS products for Intrusion Detection Systems</li> <li>- Investigate and evaluate Host Machines for vulnerabilities and identify solutions for vulnerabilities</li> </ul> </li> <li>2231 Support Defense Health Care Information Assurance Program (DHIAP)</li> <li>211 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 8432</p>											

Project D491

Page 2 of 9 Pages

Exhibit R-2 (PE 0303140A)

1429

Item 153

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303140A Communications Security (COMSEC)

D491

Equipment

## FY 1999 Planned Program:

- 1097 Perform in-house evaluations and integration of INFOSEC equipment such as COMSEC foreign nation releasable chips, high speed encryptors, trusted computer platforms and secure applications; perform evaluations of latest NSA INFOSEC crypto chips.
- 200 Continue support of TACLANE development.
- 4967 Continue Common Tool Set for C2 Protect (Information Operations/Warfare) by doing the following:
  - Continue investigation and evaluation of Network Access Control, Network Mapping and Password Generation/Authentication COTS/GOTS products.
  - Continue investigation and evaluation of Network Intrusion Detection System
  - Initiate investigation and evaluation of COTS/GOTS products for Risk Management
  - Continue investigation and evaluations of Host systems in the area of Anti-Viruses, purge tools and vulnerabilities
  - Initiate investigation of techniques for Audit Analysis

Total 6264

B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
2574	6201	2564
2574	8701	
-100	-269	
2474	8432	6264

Change Summary Explanation: Funding for FY98, +\$2.231M supports the Defense Health Care Information Assurance Program  
 Funding for FY99 increased to support Common Tool Set for Command & Control (C2) Protect (Information Operations/Warfare).

C. Other Program Funding Summary: NoneD. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
TEED Prototype Model Testing												
TEED Prototype Model Delivery												
Trusted Network Base contract award												
Trusted Network Base system review												
Trusted Network Base software coding												

Project D491

Page 3 of 9 Pages

Exhibit R-2 (PE 0303140A)

1430

Item 153

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE		PROJECT					
7 - Operational System Development		February 1998		D491					
				0303140A Communications Security (COMSEC)					
				Equipment					
<u>D. Schedule Profile</u>		FY 1998		FY 1999					
		1	2	3	4	1	2	3	4
Trusted Network Base system integration				X					
Trusted Network Base delivery					X				
Re-Programmable COMSEC award									
Re-Programmable COMSEC card design									
Re-Programmable COMSEC card test									
Integration into multiband, multimode digital radio									
AIRTERM installation kits designed									
AIRTERM installation kits testing									
TACLANE Support		X				X			X
C2 Protect Tool Set						X			X
- Network Access Control							X		X
- Intrusion Detection System						X			X
- Host Machine Vulnerabilities						X			X
- Risk Management						X			X
- Anti -Viruses						X			X
- Purge Tools						X			X
- Audit Analysis						X			X
*Denotes completed effort									

Project D491

Page 4 of 9 Pages

Exhibit R-2 (PE 0303140A)

1431

Item 153

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0303140A Communications Security (COMSEC) Equipment	D491	
<b>A. Project Cost Breakdown</b>			
Ancillary Hardware and Software Development	FY 1997 1330	FY 1998 2789	FY 1999 3000
System Engineering	0	1450	2000
Government Engineering Support	1034	1576	1097
Travel	60	100	92
Miscellaneous	50	75	75
DHAP		2231	
SBIR/STTR		211	
Total	2474	8432	6264
<b>B. Budget Acquisition History and Planning Information:</b>			
<b>Performing Organizations</b>			
Contractor or Government	Method/Type	Award or Obligation Date	Performing Activity
Performing Activity	Vehicle		EAC
<b>Product Development Organizations</b>			
GTC, Tampa, FL	C-CPFF	AUG 91	8687
GTE, Waltham, MA	C-CPFF	AUG 93	3857
Booz, Allen & Hamilton	C-CPFF	Sep 96	
Linthicum MD			
SYTEX, Inc	TM/LH	Apr 97	
Tinton Falls, NJ			
CECOM, RDEC	PO	OCT 95	700
NSA	MIPR	MAR 95	200
Support and Management Organization: None			
Test and Evaluation Organization: None			
Government Furnished Property: N/A			
Project D491	Page 5 of 9 Pages	Exhibit R-3 (PE 0303140A)	

Item 153

1432

UNCLASSIFIED

**RD T&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

**PE NUMBER AND TITLE**

**0303140A Communications Security (COMSEC)**

## Equipment

Subtotal Product Development	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	116671	8432	6264	29220	163061
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project	116671	8432	6264	29220	163061

Project D491

Page 6 of 9 Pages

Exhibit R-3 (PE 0303140A)

1433

Item 153

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998																														
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT																														
7 - Operational System Development		0303140A Communications Security (COMSEC)		D501																														
		Equipment																																
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																								
D501 Army Key Management System (AKMS)		574	3339	1169	1216	1194	1171	1144	Continuing	Continuing																								
<p><b>A. Mission Description and Budget Item Justification:</b> Project D501 - Army Key Management System (AKMS): This program provides decentralized and automated key generation, distribution and management while enhancing joint interoperability. It eliminates paper encryption key and provides communications network planning with key management on a single platform.</p> <p><b>Acquisition Strategy:</b> AKMS Initial operational test and evaluation (IOTE) is scheduled August through September FY97 with IOC in February FY98.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>554 Completed software for the AKMS workstation</li> <li>20 Provided contractor and programmatic support</li> <li>Total 574</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>3255 Provide contractor and programmatic support , and software development upgrades for Common Tier III and AKMS Workstation</li> <li>84 Small Business Innovative Research/Small Business Technology Transfer Programs (SIBIR/STTR)</li> <li>Total 3339</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1169 Provide contractor and programmatic support, and software development upgrades for Common Tier III and AKMS workstation.</li> <li>Total 1169</li> </ul> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>587</td> <td>FY 1998</td> <td>3446</td> <td>FY 1999</td> <td>1262</td> </tr> <tr> <td>Appropriated Value</td> <td>587</td> <td></td> <td>3446</td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-13</td> <td></td> <td>-107</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 BES</td> <td>574</td> <td></td> <td>3339</td> <td></td> <td>1169</td> </tr> </table>											FY 1998/1999 President's Budget	587	FY 1998	3446	FY 1999	1262	Appropriated Value	587		3446			Adjustments to Appropriated Value	-13		-107			FY 1999 BES	574		3339		1169
FY 1998/1999 President's Budget	587	FY 1998	3446	FY 1999	1262																													
Appropriated Value	587		3446																															
Adjustments to Appropriated Value	-13		-107																															
FY 1999 BES	574		3339		1169																													

Project D501

Page 7 of 9 Pages

Exhibit R-2 (PE 0303140A)

1434

Item 153

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303140A Communications Security (COMSEC)

D501

Equipment

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
OPA Z16800	13496	0	0	0	0	0	0	cont'd	cont'd
OPA TA0600	19879	13403	29714	29340	30407	26612	25894	cont'd	cont'd
OPA BS9716	827	548	350	858	847	1358	1662	cont'd	cont'd
OPA BA1201	0	4576	10315	6459	1657	48561	51559	cont'd	cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
AKMS Decision Brief												
AKMS Award Competitive Follow-on Contract												
AKMS Computer Software Configuration Item Testing			X									
AKMS Initial Operational Test & Evaluation				X								
AKMS Milestone III					X							
AKMS Type Classification					X							
AKMS Material Release					X							
AKMS Begin Fielding with Upgraded Software						X						
AKMS Initial Operational Capability							X					
AKMS Material Release CT3 Upgrade									X			
AKMS Material Release Work Station Upgrade										X		

\*Milestone completed

Project D501

Page 8 of 9 Pages

Exhibit R-2 (PE 0303140A)

1435

Item 153

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b>		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
<b>7 - Operational System Development</b>		<b>D501</b>	
PE NUMBER AND TITLE		0303140A Communications Security (COMSEC)	
Equipment			
<b>A. Project Cost Breakdown</b>		FY 1997	FY 1998
Software Engineering (Contractor)		562	946
Government Engineering Support		10	2293
Program Management Support		2	100
Congressional Adjustments		0	
Total		574	3339
<b>B. Budget Acquisition History and Planning Information:</b> Not Applicable		FY 1999	
			305
			814
			50
			1169

Exhibit R-3 (PE 0303140A)

Page 9 of 9 Pages

Project D501

Item 153

1436

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

Item 153

1437

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE  
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground Environment

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	COST (In Thousands)									
	Total Program Element (PE) Cost	37665	48939	53897	37846	34714	25512	35059	Continuing	Continuing
D2PT	SMART-T Operational Test	134	4318	0	0	0	0	0	0	4452
D253	Defense Satellite Communications Systems-Defense Communications systems (DSCS-DCS)(Phase II)	15833	14317	16160	9397	8321	11981	12418	Continuing	Continuing
D384	SMART-T	15729	14274	25264	15684	11011	7654	6680	0	267863
D386	SCAMP Block I	985	2705	0	0	0	0	0	0	100354
D455	MILSTAR EDM Terminal	857	0	0	0	0	0	0	0	299901
D456	Milstarcom System Engineering	4127	3934	4131	4735	4972	4986	5015	Continuing	Continuing
D559	Automated Communications Management System (ACMS)	0	9391	8342	6196	8606	0	0	0	32535
D561	Military Individual Communicator (MIC)	0	0	0	1834	1804	891	869	Continuing	Continuing
D562	Multiband Integrated Satellite Terminal (MIST)	0	0	0	0	0	0	4036	Continuing	Continuing
D566	Transit MDR (TRAM)	0	0	0	0	0	0	6041	Continuing	Continuing

**Mission Description and Budget Item Justification:** Military Satellite Communications (MILSATCOM) systems are joint program/project efforts with each Service, Joint Chiefs of Staff (JCS), National Command Authority, Commanders-In-Chief (CINCs), National Security Agency and Office of the Secretary of Defense assigned specific responsibilities as specified in JCS Memorandum of Policy (MOP) 37. The worldwide MILSATCOM systems are the following: Ultra High Frequency (UHF) Fleet Satellite/Air Force Satellite (FLTSAT/AFSAT) system; the Super High Frequency (SHF) Defense Satellite Communications System (DSCS); the Extremely High Frequency (EHF) MILSTAR system; the UHF Follow-On Satellite system; and all MIL-STD-1582C compatible payloads. MOP 37 designated Army as the Executive Agent for MILSATCOM Ground Subsystems. As Executive Agent for MILSATCOM Ground Subsystems, Army is responsible for developing, procuring, and maintaining the life cycle logistics support for satellite terminals; satellite control subsystems; communications subsystems; and all related equipment required to achieve end-to-end connectivity to satisfy JCS Command, Control, Communications, and Intelligence (C3I) supporting the President; JCS; CINCs; Military Departments; Department of State; and other

Exhibit R-2 (PE 0303142A)

Page 1 of 28 Pages

Item 154

1438

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>
BUDGET ACTIVITY <b>7 - Operational System Development</b>	PE NUMBER AND TITLE <b>0303142A Satellite Command (SATCOM) Ground Environment</b>	
<p>Departments and Agencies of the government. The projects in this Program Element support development acquisition programs or upgrades, still in engineering and manufacturing development (DoDD 5000.1), but which have received approval for production through DAB or other action, or production funds have been included in the DoD budget submission for the budget or subsequent fiscal year, and are, therefore, placed in Budget Activity 7.</p>		
		Exhibit R-2 (PE 0303142A)

Page 2 of 28 Pages

Item 154

1439

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

PROJECT

D2PT

Environment

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2PT SMART-T Operational Test	134	4318	0	0	0	0	0	0	4452

**A. Mission Description and Budget Item Justification:** Project D2PT - SMART-T Operational Test: Project D2PT finances the direct costs of planning and conducting operational testing and evaluation of the Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) by the Operational Test and Evaluation Command (OPTEC). SMART-T is an Acquisition Category (ACAT) IC system with an Initial Operational Test and Evaluation (IOTE) in FY 98. Operational testing is conducted under conditions as close as possible to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system.

**Acquisition Strategy:** Not Applicable

**FY 1997 Accomplishments:**

- 134 Planning and preparation for IOT&E
- Total 134

**FY 1998 Planned Program:**

- 4210 Conducts IOT&E
- 108 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 4318

**FY 1999 Planned Program:** Project not funded in FY 1999

**B. Project Change Summary**

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	137	4715	26
Appropriated Value	142	4715	
Adjustments to Appropriated Value	-8	-397	
FY 1999 President's Budget	134	4318	0

Change Summary Explanation: Funding: FY 1999 (-26) Funds realigned to higher priority requirements

Project D2PT

Page 3 of 28 Pages

Exhibit R-2 (PE 0303142A)

1440

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
7 - Operational System Development		D2PT	
0303142A Satellite Command (SATCOM) Ground Environment			
C. <u>Other Program Funding Summary:</u> Not Applicable			
D. <u>Schedule Profile</u>			
Initiate IOT&E planning and preparation			
Conduct IOT&E			
*Denotes Milestone Completion			
Project D2PT			
Exhibit R-2 (PE 0303142A)			

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

D2PT

Environment

A. Project Cost Breakdown

Operational Test and Evaluation

SBIR/STTR

Total

FY 1997

134

FY 1998

4210

108

4318

FY 1999

0

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1997

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Product Development Organizations: Not Applicable

Support and Management Organizations: Not Applicable

Test and Evaluation Organizations

OPTEC

SBIR/STTR

Government Furnished Property: None

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project

Office

EAC

Total

Prior to

FY 1997

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Project D2PT

Page 5 of 28 Pages

Exhibit R-3 (PE 0303142A)

1442

Item 154

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998							
BUDGET ACTIVITY		PROJECT								
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground D253								
		Environment								
PE NUMBER AND TITLE										
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D253	Defense Satellite Communications Systems-Defense Communications systems (DSCS-DCS)(Phase II)	15833	14317	16160	9397	8321	11981	12418	Continuing	Continuing
<p><b>A. Mission Description and Budget Item Justification: Project D253 - DSCS-DCS Phase II:</b> This project provides funds required to develop strategic and tactical Ground Subsystem equipment to support JCS validated Command, Control, Communications and Intelligence (C3I) for the worldwide Super High Frequency (SHF) Defense Satellite Communications System (DSCS) program. Continuing upgrades for the DSCS are vital to support the emerging power projection and rapid deployment role of the Armed Forces. DSCS provides warfighters multiple channels of tactical connectivity as well as interface with strategic networks and national decision-makers.</p> <p><b>Acquisition Strategy:</b> The Universal Modem System (UMS), Replacement Satellite Configuration Control Element (RSCCE), and Replacement Batson (RBATSON), programs will be followed by Competitive Firm Fixed Price Procurement Programs that contain a basic production year followed by one or more option years of production. The DSCS Integrated Management System (DIMS) and Common Network Planning Software (CNPS) programs are software development programs that are not planned to have follow-on production.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• 2560 Completed MDR Technical Insertion UM Program</li> <li>• 2888 Continued DIMS Interface Software (Phase II)</li> <li>• 1718 Continued the NDI Adaptation Phase for the RSCCE</li> <li>• 4573 Initiated development of the Replacement Batson</li> <li>• 1800 Initiated development of the Integrated Baseband Workstation (IBWS)</li> <li>• 560 Developed the specification and acquisition requirements package for the Common Network Planning Software (CNPS)</li> <li>• 1734 Continued IRF and SETA efforts</li> <li>• Total 15833</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 403 Complete the NDI Adaptation Phase for the RSCCE</li> <li>• 4038 Continue DIMS Interface Software (Phase III)</li> <li>• 4555 Continue the RBATSON program</li> <li>• 1900 Complete the IBWS program</li> <li>• 559 Complete the specification and acquisition requirements package for the Common Network Planning Software(CNPS) program</li> </ul>										

Project D253

Page 6 of 28 Pages

Exhibit R-2 (PE 0303142A)

1443

Item 154

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

D253

Environment

## FY 1998 Planned Program: (continued)

- 2508 Continue IRF and SETA efforts
- 354 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 14317

## FY 1999 Planned Program:

- 700 Complete the RBATSON program
- 3300 Continue the DIMS Interface Software program
- 3850 Initiate the CNPS program
- 6000 Develop prototype microwave link from Kaiserslautern through Donnersburg to Heidelberg Germany as per agreement between Program Manager, Defense Communications and Army Transmission Systems and Defense Information Systems Agency
- 2310 Continue IRF and SETA efforts
- Total 16160

## B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	16510	14890	11610
Appropriated Value	17063	14890	
Adjustments to Appropriated Value	-1230	-573	
FY 1999 President's Budget	15833	14317	16160

## Change Summary Explanation:

Funding: FY 1999 (+4550) funding adjustment represents an increase to support CINC and US Army Europe transmission requirements(+6000) and realignment to higher priority requirements (-1450).

Schedule: FY98 CNPS contract award delayed until FY99 due to budget reductions leading to a program restructure based on Defense Information Systems Agency(DISA) prioritization

## C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 2 - SSN: BB8500	92689	84631	94616	71549	75791	65130	63544	Cont	Cont

Project D253

Page 7 of 28 Pages

Exhibit R-2 (PE 0303142A)

1444

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998		
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT			
7 - Operational System Development	0303142A Satellite Command (SATCOM) Ground Environment	D253			
<b>D. Schedule Profile</b>					
		FY 1997	FY 1998	FY 1999	
		1	2	3	4
Award R-Batson Contract		X*			
DIMS Interface SW Testing (Phase I)		X*			
IBWS System Specification Completion		X*			
RSCCE Testing			X		
DIMS Interface SW Testing (Phase II)			X		
CNPS Contract Award				X	
RBATSON Testing				X	
DIMS Interface SW Testing (Phase III)					X
Microwave Test Link Contract Award					X
* Denotes milestone completion					

Project D253

Page 8 of 28 Pages

Exhibit R-2 (PE 0303142A)

1445

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment		D253
<b>A. Project Cost Breakdown</b>				
Development (Prototype, Sys Engr, Test & Evaluation)		FY 1997	FY 1998	FY 1999
Integrated Research Facility		11331	10036	12950
Contractor Engineering Support		723	800	800
Government Engineering Support		987	638	498
Program Management Support		1556	1291	910
SBIR/STTR		1236	1198	1002
Total		15833	354	16160
<b>B. Budget Acquisition History and Planning Information:</b> Not Applicable				
Project D253		Page 9 of 28 Pages		Exhibit R-3 (PE 0303142A)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment				D384					
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D384	SMART-T	15729	14274	25264	15684	11011	7654	6680	0	267863	

**A. Mission Description and Budget Item Justification: Project D384 - SMART-T:** The Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) will provide a range extension capability for the Army's Mobile Subscriber Equipment (MSE) to support the Force Projection Army. Specifically, it will provide a satellite interface to permit uninterrupted communications as our advancing forces move beyond the line-of-sight capability of MSE. This equipment will communicate at both low and medium data rates (LDR/MDR) over the MILSTAR satellite constellation. It will also be compatible with the UHF Follow-On (UFO); the Navy Fleetsatcom EHF satellite package; and MIL-STD-1582B/C compatible payloads. It will provide the security, mobility, and anti-jam capability required to defeat the threat and satisfy the critical need as stated above. The SMART-T will also have Low Probability of Interception and Low Probability of Detection (LPI/LPD) to avoid being targeted for destruction, jamming or intercept. The prime mover will be a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) configured with all the electronics and the self-erectable antenna.

**Acquisition Strategy:** The SMART-T program employed a competitive development strategy. The development phase included two contractors performing under Cost-Plus-Incentive-Fee (CPIF) contracts. The contracts were awarded on 9 Nov 92 to Raytheon Company (Marlborough, MA) and Rockwell International (Richardson, TX). Twelve Engineering Development Model (EDM) terminals (6 from each contractor) were developed under the two contracts. The streamlining features of this phase included a reliability growth plan to achieve the required reliability by Follow-On Test and Evaluation (FOT&E). Both Low Rate Initial Production (LRIP) and Full Rate Production (FRP) were competitively awarded to Raytheon Company on 7 Feb 96 under a single contract based upon the development contract effort and LRIP/FRP proposals. The Project Management Office elected to defer discrete development initiatives until after down select for greater cost efficiency. A SMART-T Milestone III Decision will be conducted prior to exercising the first FRP Option in FY 99. The total Army terminal requirement is 209, of which 43 will be procured during LRIP (base year plus one option) to ensure sufficient quantities are available for the launch of the first MDR satellite in FY 99. The Air Force will also be procuring 9 terminals during LRIP. The Full Rate Production (FRP) quantities (166 Army terminals) will be awarded as fixed price options to the LRIP/FRP contract following Milestone III approval. Additional quantities (i.e., 95) will be procured for the Air Force, Marine Corps, and JCSE.

**FY 1997 Accomplishments:**

- 10335 Continued development of Network Control, Demand Assigned Multiple Access, Payload Specification Changes and C4I Technical Architecture
- 3530 Continued development of interactive training courseware
- 1864 Conducted Terminal Test with Lincoln Labs MDR Simulator
- Total 15729

Project D384

Page 10 of 28 Pages

Exhibit R-2 (PE 0303142A)

1447

Item 154

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

D384

Environment

## FY 1998 Planned Program:

- 10270 Continue development of Demand Assigned Multiple Access
- 2545 Continue development of Network Control, Payload specification and C4I Technical Architecture
- 1101 Complete development of interactive training courseware
- 358 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 14274

## FY 1999 Planned Program:

- 12512 Continue development of Network Control and C4I Technical Architecture
- 8252 Continue development of Demand Assigned Multiple Access
- 4500 Continue Payload Specification Change development work resulting from test with on-orbit MDR Payload satellite
- Total 25264

## B. Project Change Summary

FY 1998/1999 President's Budget

Appropriated Value

Adjustments to Appropriated Value

FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
16413	17264	24641
17217	15664	
-1488	-1390	
15729	14274	25264

## Change Summary Explanation:

Funding: FY 1998 reduction due to undistributed Congressional reductions applied against this PE/Project(-1390)

## C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army 2 - SSN: BC 4002	33112	22237	57743	63009	43228	15635	10682	8451	305526
Other Procurement Army 4 - SSN: BS 9720	1583	1042	1407	0	2817	2553	1965	1053	12420

Project D384

Page 11 of 28 Pages

Exhibit R-2 (PE 0303142A)

1448

Item 154

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

**0303142A Satellite Command (SATCOM) Ground Environment**

## PROJECT

**D384**

	FY 1997	FY 1998	FY 1999
D. Schedule Profile			
Conduct SIM 2 Test	1		
Complete Interactive Training Courseware	2 X*	4 1	3 1
Complete DAMA Development		X	X

**\*Denotes Milestone Completion**

Project D384

Page 12 of 28 Pages

Exhibit R-2 (PE 0303142A)

1449

Item 154

**UNCLASSIFIED**

**UNCLASSIFIED**

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		0303142A Satellite Command (SATCOM) Ground Environment		February 1998	D384
7 - Operational System Development					
<b>A. Project Cost Breakdown</b>					
Contractor	FY 1997	FY 1998	FY 1999		
	9617	11620	19814		
Government Systems Engineering & Project Mgmt	6112	2296	5450		
SBIR/STTR		358			
Total	15729	14274	25264		
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total
Performing Activity				EAC	Prior to FY 1997
				*	FY 1997
					FY 1998
					FY 1999
					Budget to Complete
					Total Program
<b>Product Development Organizations</b>					
Dual Development	C-CPIF	09 Nov 92			
<b>Contracts</b>					
Other Contracts	MIPR/PWD	Various			
Govt Support	N/A	Various			
<b>Support and Management Organizations</b>					
Other Contracts	MIPR/PWD	Various			
Core Support	N/A	Various			
Lab Activities	MIPR/PWD	Various			
Lincoln Labs	MIPR	Various			
SBIR/STTR					
* Contract effort completed					

Project D384

Page 13 of 28 Pages

Exhibit R-3 (PE 0303142A)

Item 154

**UNCLASSIFIED**



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

D384

0303142A Satellite Command (SATCOM) Ground Environment

## Government Furnished Property

Contract

Method/Type

Award or

Obligation

Date

Delivery

Date

or Funding

Vehicle

MIPR

Jul 93

CDH Chips/Chip

Carriers

Product Development Property

Total

Prior to

FY 1997

149

0

0

0

149

Total

Prior to

FY 1997

131679

39888

171567

Total

Prior to

FY 1997

11856

3873

15729

Total

Prior to

FY 1997

21264

4000

25264

Total

Prior to

FY 1997

12520

1754

14274

Total

Prior to

FY 1997

29729

11300

41029

Total

Prior to

FY 1997

207048

60815

267863

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Project D384

Page 14 of 28 Pages

Exhibit R-3 (PE 0303142A)

1451

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment								D386	
		COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D386	SCAMP Block I		985	2705	0	0	0	0	0	0	100354
<p><b>A. Mission Description and Budget Item Justification:</b> Project D386 - SCAMP: The SCAMP Block I Terminal will provide four simultaneous channel full duplex data, half duplex voice communications at 2400 bits per second (bps) each in a 37 pound manportable configuration. These satellite terminals are to be employed by units that require range extension for command and control communications. Block I will provide priority tactical ground users with the capability to transmit and receive intelligence, command, and control traffic from a base station. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. It will provide Low Data Rate (LDR) secure voice at 2400 bps and secure data at 75-2400 bps, as well as interface with Common Hardware/Software devices such as the Lightweight Computer Units and the Hand-Held Terminal Unit. The SCAMP BLK I will be fully interoperable within the Army C4I Technical Architecture. The terminal will have embedded COMSEC and TRANSEC with set-up and teardown in less than 10 minutes. In addition to operation on MILSTAR satellites, the SCAMP BLK I will operate on all satellites which utilize the MIL-STD-1582C/D LDR waveform. It will be required to operate in environmental conditions that include smoke, aerosol, rain, fog, snow, haze and dust, and must operate in the transmit, receive or stand-by mode throughout an entire mission (typically 30 days). SCAMP Block I is the first EHF manportable terminal and provides direct support to the tactical warfighter mobile forces with greater anti-jam protection, lower probability of intercept, and lower probability of detection.</p> <p><b>Acquisition Strategy:</b> The Block I development phase initially included two competing contractors performing under Cost-Plus-Incentive-Fee (CPIF) which was competitively awarded in Sep 92. Based upon unexpected cost growth of both contractors and the lack of government affordability to retain two, an early determination was made to Terminate for Convenience the Lockheed Corporation contract on 16 Sep 93. A Market Survey was conducted in Jun 94 in which five vendors participated. On 26 Oct 94, the AAE restructured the SCAMP Block I program and the Martin Marietta Corporation contract was Terminated for Convenience. A Milestone III Decision for a competitive full-scale production buy (quantity of 312 multi-service terminals) was approved on 15 Nov 94. An Advanced Planning Briefing to Industry was held at Fort Monmouth, New Jersey, on 29 Nov 94. On 7 Apr 95, the SCAMP Block I was redesignated an ACAT III program. Team Fort Monmouth awarded the SCAMP Block I Firm Fixed Price Production Contract to Rockwell Collins Inc, Richardson, Texas, on 23 Feb 96. Engineering Feasibility Efforts (EFE) to develop the objective terminal in the range of 12-15 pounds was approved in the Acquisition Decision Memorandum to begin in FY 96 through FY 99. These efforts provide confidence in technical approach and lead to Milestone II Engineering/Manufacturing Development (EMD) Phase for the objective system. The SCAMP Block II effort previously funded in this PE is restructured to PE 0603856A, Project D389 beginning in FY 97.</p> <p><b>FY 1997 Accomplishments Program:</b></p> <ul style="list-style-type: none"> <li>748 Conducted System level tests</li> <li>237 Initiated/completed UHF Follow-On (UFO), Fleetsat EHF Package (FEP) Control Planning Tools</li> <li>Total 985</li> </ul>											

Project D386

Page 15 of 28 Pages

Exhibit R-2 (PE 0303142A)

1452

Item 154

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

D386

Environment

## A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor	732	1800	0
Government Systems Engineering and Project Management	253	838	0
SBIR/STTR		67	
Total	985	2705	

## B. Budget Acquisition History and Planning Information

## Performing Organizations

Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations**</b>											
Martin Marietta	CPIF	Sep 92	38998		38998	38998	0	0	0	0	38998
Lockheed	CPIF	Sep 92	9650		9650	9650	0	0	0	0	9650
Other Contracts	PWD	Various	N/A			15845	732	1800	0	0	18377
Govt Support	MIPR/PWD	Various	N/A			7826	0	121	0	0	7947
<b>Support and Management Organizations:</b>											
Other Contracts	MIPR/PWD	Various	N/A			7861	253	0	0	0	8114
Core Support	N/A	Various	N/A			3719	0	0	0	0	3719
Lincoln Labs	MIPR	Various	N/A			12352	0	717	0	0	13069
Lab Activities	MIPR/PWD	Various	N/A			353	0	0	0	0	353
SBIR/STTR								67			67
<b>Test and Evaluation Organizations:</b>											
EMP Test	MIPR	Sep 96				60		0	0	0	60

(Kirkland AFB)

\*\* Lockheed Terminated for Convenience 9/93

\*\* Martin Marietta Terminated for Convenience 10/94

Government Furnished Property: Not Applicable

Project D386

Page 17 of 28 Pages

Exhibit R-3 (PE 0303142A)

1454

Item 154

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

**0303142A Satellite Command (SATCOM) Ground D386**

## Environment

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	72319	732	1921			74972
Subtotal Support and Management	24345	253	784			25382
Subtotal Test and Evaluation						
Total Project	96664	985	2705			100354

Page 18 of 28 Pages

Exhibit R-3 (PE 0303142A)

Item 154

**UNCLASSIFIED**

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998														
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT															
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment								D455															
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost															
D455	MILSTAR EDM Terminal	857	0	0	0	0	0	0	0	299901															
<p><b>A. Mission Description and Budget Item Justification:</b> Project D455 - MILSTAR EDM Terminal (MET): These EHF MILSTAR Engineering Development Model (EDM) terminals will be utilized as test assets to support satellite payload tests. They will also reduce risk in the Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) and Single Channel Anti-Jam Manportable (SCAMP) terminal development process. The terminals are capable of providing mobile, survivable, anti-jam, low probability-of-intercept communications from an S-250 shelter mounted on a Common Utility Cargo Vehicle (CUCV) truck towing a trailer with generator.</p> <p><b>Acquisition Strategy:</b> A single Full-Scale Engineering Development (FSED) contract was awarded in Mar 85 to develop and produce 15 FSED terminals. Magnavox Electronic Systems Company received the award. A sole source production contract was to be executed in Nov 92; however, due to the changed world situation, no production buy was required. The MET will be used for SCAMP and SMART-T contractor risk reduction tests and satellite payload tests.</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>857 Continued Government and Contractor support of testing with SCAMP and SMART-T to reduce risk</li> </ul> <p>Total 857</p> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>859</td> <td>0</td> <td>0</td> </tr> <tr> <td>878</td> <td></td> <td></td> </tr> <tr> <td>-21</td> <td></td> <td></td> </tr> <tr> <td>857</td> <td>0</td> <td>0</td> </tr> </table> <p><b>C. Other Program Funding Summary:</b> Not Applicable</p>											FY 1997	FY 1998	FY 1999	859	0	0	878			-21			857	0	0
FY 1997	FY 1998	FY 1999																							
859	0	0																							
878																									
-21																									
857	0	0																							

Project D455

Page 19 of 28 Pages

Exhibit R-2 (PE 0303142A)

1456

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																									
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT																								
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment		D455																								
<table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th></th> <th>FY 1998</th> <th></th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>1</td> <td>2</td> </tr> <tr> <td>X*</td> <td></td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4</td> </tr> </tbody> </table>						FY 1997		FY 1998		FY 1999	1	2	3	4	1	2	X*					3						4
	FY 1997		FY 1998		FY 1999																							
1	2	3	4	1	2																							
X*					3																							
					4																							
<p><b>D. Schedule Profile</b></p> <p>SMART-T Low Data Rate (LDR)</p> <p>Verification</p> <p>*Denotes milestone completion</p>																												
Project D455		Page 20 of 28 Pages		Exhibit R-2 (PE 0303142A)																								

Item 154

1457

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

D455

Environment

A. Project Cost Breakdown

Government Systems Engineering and Project Management

Total

FY 1997

857

857

FY 1998

0

FY 1999

0

B. Budget Acquisition History and Planning InformationPerforming Organizations

Contractor or

Government

Performing Activity

Method/Type

Award or

Obligation

Date

Performing Activity

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

EAC

Total

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

FY 1997

FY 1998

FY 1999

UNCLASSIFIED

1458

Page 21 of 28 Pages

Exhibit R-3 (PE 0303142A)

Project D455

Item 154

Government Furnished Property: Not applicable



**RD T&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

**0303142A Satellite Command (SATCOM) Ground Environment**

## PROJECT

**D455**

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	180745	302				181047
Subtotal Support and Management	93333	555				93888
Subtotal Test and Evaluation	24966					24966
Total Project	299044	857				299901

Project D455

Page 22 of 28 Pages

**Exhibit R-3 (PE 0303142A)**

1459

Item 154

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303142A Satellite Command (SATCOM) Ground

D456

Environment

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D456 Milsatcom System Engineering	4127	3934	4131	4735	4972	4986	5015	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** Project D456 - Milsatcom System Engineering: . As Executive Agent for MILSATCOM Ground Subsystems, Army is responsible for developing, procuring, and maintaining the life cycle logistics support for satellite terminals; satellite control subsystems; communications subsystems; and all related equipment required to achieve end-to-end connectivity to satisfy JCS Command, Control, Communications, and Intelligence (C3I) supporting the President; JCS; CINCs; Military Departments; Department of State; and other Departments and Agencies of the government. This project provides centralized funding for advanced systems engineering, analysis, research, development, test, and evaluation of new and emerging technologies that optimize terminal performance and interoperability on the digitized battlefield.

**Acquisition Strategy:** This project funds advanced systems engineering, research, development, test and evaluation of new and emerging technologies to enhance terminal performance and optimize communications control. Once the technologies are mature and deemed feasible, funding and management responsibility for implementation of the technology is transitioned to cognizant Milsatcom programs.

**FY 1997 Accomplishments:**

- 1360 Continued Spitfire 5KHz DAMA Waveform Improvement
- 1458 Completed government and contractor support of SHF Tri-Band Advanced Range Extension Terminal (STAR-T)
- 714 Continued developments and conducted field tests for SATCOM-on-the-Move initiatives (formerly SCATS)
- 595 Battlefield Digitization integration efforts
- Total 4127

**FY 1998 Planned Program:**

- 450 Continue Spitfire DAMA Waveform Improvement
- 1100 Initiate Spitfire software remoting capability development
- 320 Complete various SATCOM on the Move analysis, acquisition, and test efforts
- 750 Battlefield Digitization integration efforts
- 1215 Advanced SATCOM architecture development
- 99 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 3934

Project D456

Page 23 of 28 Pages

Exhibit R-2 (PE 0303142A)

1460

Item 154

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

**0303142A Satellite Command (SATCOM) Ground**

D456

•	574	Complete Spitfire DAMA Waveform Improvement
•	671	Complete Spitfire software remoting capability development
•	750	Continue Battlefield Digitization architecture efforts
•	1036	Advanced SATCOM architecture development
	1100	Advanced EHF waveform development
	4131	
		Total

## FY 1998/1999 President's Budget

Adjustments to Appropriated Value

100

Other Procurement Army 2, SSN: BB8417

#### D. Schedule Profile

### Conduct 5KHz Waveform demonstration

## Initiate Spitfire Software Remoting

## Complete Spitfire Software Remoting

\* Denotes milestone completion

Page 24 of 28 Pages

Exhibit R-2 (PE 0303142A)

1461

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment	D456
<b>A. Project Cost Breakdown</b>			
Development Support Equipment Acquisition	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	2175	2190	2273
Government Engineering Support	479	545	661
Program Management Support	753	500	585
SBIR/STTR	720	600	612
Total	4127	3934	4131
<b>B. Budget Acquisition History and Planning Information: Not Applicable</b>			

Project D456

Page 25 of 28 Pages

Exhibit R-3 (PE 0303142A)

1462

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment		D559					
COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D559 Automated Communications Management System (ACMS)	0	9391	8342	6196	8606	0	0	0	32535

**A. Mission Description and Budget Item Justification: Project D559 - ACMS:** The Air Force funded the ACMS from FY93-FY95. All Services (USAF, Army, and Navy) are funding for their unique software and hardware requirements. ACMS is critical to the dynamic and efficient operation of battlefield command and control networks using Air Force developed MILSTAR satellites and Army developed MILSTAR terminals. ACMS enables Army users to take advantage of advanced features of the MILSTAR system, to include directly tasking the satellite constellation, repointing payload antennas, and rapidly changing network configurations. ACMS is not a new start. The Army initiated participation in FY96 under project D384. The ACMS must be integrated into ISYSCON to make it available to the tactical user and to coordinate MILSTAR range extension of MILSTAR networks.

**Acquisition Strategy:** ACMS is not a new start. Development efforts were initiated in FY96 under D384 and D386. The D559 ACMS Development funding line was newly created in FY98. ACMS is a Joint Service MILSTAR community initiative which is an integral part of the MILSATCOM Architecture. The Milstar Joint Program Office (MJPO) is managing the overall development effort. Input and interaction with the terminal offices is required to ensure a comprehensive system solution is achieved. Development work began in FY96 and will continue through FY01, as ACMS is phased in and tested incrementally.

**FY 1997 Planned Program:** Efforts funded in Project D384, PE 0303142A

**FY 1998 Planned Program:**

- 7985 Begins integration, test and fielding of incremental builds
- 650 Participates in MILSTAR Intersegment Test (MST6000)
- 420 Participates in Joint Technical Reviews, Management Reviews, Technical Interchange Meetings, and Technical Demonstrations
- 336 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
- Total 9391

**FY 1999 Planned Program:**

- 7322 Continues integration, test and fielding of incremental builds
- 600 Participates in MILSTAR Intersegment Test (MST8000)
- 420 Participates in Joint Technical Reviews, Management Reviews, Technical Interchange Meetings, and Technical Demonstrations
- Total 8342

Project D559

Page 26 of 28 Pages

Exhibit R-2 (PE 0303142A)

Item 154

1463

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

0303142A Satellite Command (SATCOM) Ground

**D559**

FY 1999

13818

13818

-4427

8342

**Summary Explanation:**

Funding: FY 1998 (-4000) Army reprogramming to support critical digitization requirements and (-427) undistributed Congressional reduction. FY 1999 (+4441) Increase funds continuation of integration, test, and fielding of incremental builds. These efforts were originally budgeted in FY 1998 but have been rephased to FY 1999 to free up funds for digitization.

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

Total Cost

	FY 1997	FY 1998	FY 1999
--	---------	---------	---------

FY 1998

FY 1999

FY 1998

FY 1999

Page 27 of 28 Pages

Exhibit R-2 (PE 0303142A)

Item 154

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				D559
7 - Operational System Development		0303142A Satellite Command (SATCOM) Ground Environment				D559
A. Project Cost Breakdown		FY 1997	FY 1998	FY 1999		
Product Development		0	7794	6924		
Support and Management		0	1261	1418		
SBIR			336			
Total		0	9391	8342		
B. Budget Acquisition History and Planning Information						
Performing Organizations						
Contractor or	Contract					
Government	Method/Type					
Performing	or Funding					
Activity	Vehicle					
	Date					
Product Development Organizations						
Other Contracts	TBD					
Govt Support	MIPR/PWD					
Support and Management Organizations						
Other Contracts	MIPR/PWD					
Core Support	N/A					
SBIR/STTR						
Test and Evaluation Organizations: None						
Government Furnished Property: None						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						

Project D559	Exhibit R-3 (PE 0303142A)
Page 28 of 28 Pages	

Project D559

Page 28 of 28 Pages

Exhibit R-3 (PE 0303142A)

1465

Item 154

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT				
7 - Operational System Development		0303150A Army Global Command and Control System (AGCCS)				DC86				
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
COST (In Thousands)										
DC86 Army Global Command and Control System		18877	14581	17543	9526	14633	14473	13476	12176	115285

**A. Mission Description and Budget Item Justification: Project DC86 - AGCCS:** This project is the Army component system that directly supports the implementation of the Joint Global Command and Control System (GCCCS). This support is being accomplished through the Army's Global Command and Control System (AGCCS), which is a selection of the Army's best-of-breed command and control functionality. The AGCCS-developed software systems will dramatically improve the Army's ability to analyze courses of action; develop and manage Army Forces supporting joint war plans; and ensure that the Army portions of war plans are feasible. The AGCCS will provide a layered architecture and functional best-of-breed software applications to develop a totally integrated component of the GCCS. This project involves the development, enhancement and integration of software functionality that currently exists within the Army's inventory or is currently under development and is therefore appropriately included in Budget Activity 7.

**Acquisition Strategy:** The AGCCS software integration and development effort is a five year incrementally funded completion effort. A hybrid (Cost-Plus-Award Fee and Firm-Fixed-Price) contract was awarded to Lockheed Martin Corporation (LMC) in December 1994. The contract consists of software development, software maintenance and relocation/de-installation of the test facility upon completion of the contract. Based on the priority of achieving WWMCS shutoff and replacing the system with the GCCS/AGCCS, the remaining software integration and development effort that was originally scheduled as Capability Packages 1 through 10 deliveries was restructured. PM STCCS established an Integrated Process Team (IPT) to review the status of the remaining software integration and development functional deliveries. The results of the IPT were instituted providing the users of AGCCS, five mission support software deliveries identified as Capability Package 1 (CPI), and Deliveries 1 through 4. CPI, which was delivered in 2QFY96 and designated IOC in 4QFY96, provided the replacement for the AWIS strategic mission support applications/software and the Army's GCCS interface to selected HQDA, and FORSCOM sites. Deliveries 1 through 4, which will be delivered throughout the remainder of the LMC contract, will provide the integration of selected STACCS, TACCIMS, and CSMCS Echelons Above Corps (EAC) mission support applications/software into the CPI baseline. Deliveries 1 through 4 are scheduled to be delivered to 18 Army sites located throughout the world. A common hardware platform will be used within the Army to implement AGCCS/GCCCS. This will include products from the Army's Common Hardware/Software-2 (CHS-2) contract, which consists of Commercial Off The Shelf (COTS) hardware and software. The COTS hardware and software will provide computers with expanded processing, storage and communications capability, as well as office-automation and management software.

Project DC86

Page 1 of 5 Pages

Exhibit R-2 (PE 0303150A)

1466

Item 155

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	0303150A Army Global Command and Control System (AGCCS)		
7 - Operational System Development				
FY 1997 Accomplishments:				
• 1636	Performed Systems Engineering			
• 11651	Continued Prime Mission Software Development			
• 644	Performed Data Engineering			
• 2984	Conducted Systems Test and Evaluation			
• 1962	Performed Program Support and Management Efforts			
Total	18877			
FY 1998 Planned Program:				
• 708	Perform Systems Engineering			
• 10324	Continue Prime Mission Software Development			
• 500	Perform Data Engineering			
• 750	Conduct Systems Test and Evaluation			
• 1933	Perform Program Support and Management Efforts			
• 366	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)			
Total	14581			
FY 1999 Planned Program:				
• 2516	Perform Systems Engineering			
• 11577	Continue Prime Mission Software Development IDIQ			
• 550	Perform Data Engineering			
• 1150	Conduct Systems Test and Evaluation			
• 1750	Perform Program Support and Management Efforts			
Total	17543			
B. Project Change Summary				
FY 1998/1999 President's Budget		FY 1997	FY 1998	FY 1999
Appropriated Value		19389	15045	14793
Adjustments to Appropriated Value		19804	14045	
FY 1999 President's Budget		-927	-536	
		18877	14581	17543
Change Summary Explanation: Funding: FY 1999 (+2750) increased as a result of a realignment action from AGCCS OPA. The realignment properly aligns procurement and RDT&E funding, and will allow the funding of additional required development and test effort.				
Project DC86		Exhibit R-2 (PE 0303150A)		
		Page 2 of 5 Pages		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998
BUDGET ACTIVITY	PROJECT DC86						
	PE NUMBER AND TITLE						
	0303150A Army Global Command and Control						
	System (AGCCS)						
<b>C. Other Program Funding Summary</b>							
Procurement OPA-2	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
BA8250 Army Global Cmd & Cont Sys (AGCCS)	20340	16807	20562	13229	8710	6438	6440
<b>D. Schedule Profile</b>							
AGCCS Delivery 2 Start	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
AGCCS Delivery 1 Complete	1	2	3	4	1	2	3
AGCCS Delivery 3 Start		X*					4
AGCCS Delivery 4 Start			X*				
AGCCS Delivery 2 Complete				X		X	
AGCCS Delivery 3 Complete					X		X
*Milestone Complete							
Total Cost							
							205229
To Compl							84391

Project DC86

Page 3 of 5 Pages

Exhibit R-2 (PE 0303150A)

1468

Item 155

**UNCLASSIFIED**



**UNCLASSIFIED**

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		0303150A Army Global Command and Control System (AGCCS)		February 1998	DC86
7 - Operational System Development					
<b>Government Furnished Property</b>					
	Contract				
Item	Method/Type or Funding	Award or Obligation	Delivery		
Description	Vehicle	Date	Date		
<b>Product Development Property</b>					
GFE	MIPR				
		Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
		0	300	0	0
				Budget to Complete	Total Program
				2750	3050
<b>Support and Management Property: None</b>					
<b>Test and Evaluation Property: None</b>					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					
		Total Prior to FY 1997	FY 1997	FY 1998	FY 1999
			13048	10324	12808
			5483	4117	4585
			346	140	150
			18877	14581	17543
				Budget to Complete	Total Program
				45651	81831
				17993	32178
				640	1276
				64284	115285

Item 155

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

1471

Item 155

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305114A Joint Precision Approach Landing

D711

System (JPALS)

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D711 Joint Precision Approach Landing System (JPALS)	0	728	0	0	0	0	0	0	728

**A. Mission Description and Budget Item Justification:** The Joint Precision Approach Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operation missions operating from fixed base, ship, tactical and austere environments. The effort will develop methodology to incorporate JPALS into aircraft while considering aircraft environment, electrical power, system space, weight, antenna placement and electromagnetic compatibility without nullifying low observable capability requirements. The project in this Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and is, therefore, correctly placed in Budget Activity 7.

**Acquisition Strategy:** The acquisition strategy is to support the joint research and development project leading to production of a joint system.

**FY 1997 Accomplishments:** Project not funded in FY 97

**FY 1998 Planned Program:**

- 710 Support JPALS research and development efforts.
- 18 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)
- Total 728

**FY 1999 Planned Program:** Project not funded in FY 99

**B. Project Change Summary**

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	750	0
Appropriated Value	0	750	
Adjustments to Appropriated Value		-22	
FY 1999 Pres Budget Request	0	728	0

**C. Other Program Funding Summary:** Not applicable

**D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
1	2	3	4
Support JPALS efforts	3	4	1
			2
			3
			4

Project D711

Page 1 of 2 Pages

Exhibit R-2 (PE 0305114A)

1472

Item 156

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE	
7 - Operational System Development				0305114A Joint Precision Approach Landing System (JPALS)	D711
<b>A. Project Cost Breakdown</b>					
Program Management Support				FY 1997	FY 1998
SBIR/STTR					FY 1999
Total				0	710
					18
					728
					0
<b>B. Budget Acquisition History and Planning Information:</b>					
<b>Performing Organizations</b>					
Contractor or	Method/Type	Award or	Performing	Total	
Government	or Funding	Obligation	Activity	Prior to	
Activity	Vehicle	Date	EAC	FY 1997	FY 1998
Product Development Organizations : None					FY 1999
Support and Management Organizations					
Gov't Agencies	MIPR	Feb 98	710	710	710
SBIR/STTR			18	18	18
Test and Evaluation Organizations: None					
Government Furnished Property: None					
Subtotal Product Development					
Subtotal Support and Management					728
Subtotal Test and Evaluation					728
Total Project					728

Project D711

Page 2 of 2 Pages

Exhibit R-3 (PE 0305114A)

1473

Item 156

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305128A Security and Intelligence Activities								H12	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
H12	Intelligence Support to Force XXI	464	484	950	942	933	948	964	0	5673	
<p><b>A. Mission Description and Budget Item Justification:</b> This program element provides funding to develop Proof of Concepts to define fundamental capabilities and limitations of Focused Intelligence XXI technologies which supports Force XXI. Focused Intelligence addresses the functional areas of Situational Awareness, Information Management, and Predictive Analysis. This requires a comprehensive understanding of the following seven critical technologies when integrated into live, virtual or constructive environments. These critical technology areas include: Displays (public, cockpit and heads-up), computer hardware capable of high speed analytical and graphical processing, computer software for distributed tactical or simulation environments (including tools such as Knowledge Based Reasoning and Artificial Intelligence), networks which link tactical and high speed wide area capabilities (utilizing Asynchronous Transfer Mode (ATM), Synchronous Optical Net (SONET), and multi-level security capabilities) throughout all echelons, sensors for real-time information of the battlefield throughout the electromagnetic spectrum, the Dynamic Visualization Databases for live or synthetic environment (including terrain, features, texture, images, weather, environment, entities and units as a minimum), and the Automatic Target Recognition (ATR) and Assisted Target Recognition (ATR) for timeline reductions. This project supports development of new operational concept efforts in the Focused Intelligence arena and is therefore appropriately funded in Budget Activity 7.</p> <p><b>Acquisition Strategy:</b> Utilize existing INSCOM and the Defense Advanced Research Project Agency contracts to obtain hardware and software integration support. Major integrated Proofs of Concepts, with U.S. Forces Korea and the 18th Airborne Corps (101st Airborne Division and 525th Military Intelligence Brigade) as the user, will occur on a quarterly basis. Major milestones in FY97 are XVIII ABC exercises (June 1997 and September 1997) and Division XXI AWE (November 1997).</p> <p><b>FY 1997 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>125 Focused Intelligence Proofs of Concepts during USFK FOAL EAGLE Exercise, November 1996 on situational awareness applications</li> <li>264 Focused Intelligence Proofs of Concepts with USFK ULCHI FOCUS LENS Exercise, July/August 1997, emphasis on situational awareness information operations predictive analysis and information management</li> <li>75 Transition USFK Proofs of Concepts into Force XXI train-up, September 1997, with applications emphasizing Blue Force support</li> </ul> <p>Total 464</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>472 Expand Proofs of Concepts vertically to Divisions with quarterly integration tests</li> <li>12 Small Business Innovative Research/Small Business Technology Transfer Programs</li> </ul> <p>Total 484</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>950 Transition technology horizontally to Corps/Divisions continuing Proofs of Concept test with quarterly integration tests</li> </ul> <p>Total 950</p>											

Project H12

Page 1 of 3 Pages

Exhibit R-2 (PE 0305128A)

1474

Item 157

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

0305128A Security and Intelligence Activities

H12

Total	To
Cost	Compl

#### **D. Schedule Profile**

## Proofs of Concept

Item 157

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0305128A Security and Intelligence Activities	H12	
<b>A. Project Cost Breakdown</b>			
Primary Hardware Development	FY 1997	FY 1998	FY 1999
Software Development	95	93	352
Developmental/Operational Test	195	187	390
Integrated Logistics Support	134	139	142
Total	40	65	66
	464	484	950
<b>B. Budget Acquisition History and Planning Information:</b> Not applicable.			

Project H12

Page 3 of 3 Pages

Exhibit R-3 (PE 0305128A)

1476

Item 157

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1477

Item 157

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305204A Tactical Unmanned Aerial Vehicles								D114	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D114	Tactical Unmanned Aerial Vehicles	0	0	75636	4000	4476	5500	5241	Continuing	Continuing	
<p><b>A. Mission Description and Budget Item Justification</b> The Tactical Unmanned Aerial Vehicle (TUAV), "Outrider", provides Army brigades/battalions, USMC regiments/battalions, and Navy forces with dedicated day/night, reconnaissance, surveillance and target acquisition (RSTA) and intelligence. Outrider provides the tactical warfighting commander with critical battlefield information in the rapid cycle time required for success at the tactical level. The Joint Requirements Oversight Council (JROC) reassessed warfighter UAV priorities and reconfirmed the TUAV as the JROC's top UAV priority to meet Service requirements in JROCM 173-96, Unmanned Aerial Vehicles, 12 November 1996. The Outrider Advanced Concept Technology Demonstration (ACTD) system consist of four air vehicles, each configured with an electro-optic (EO)/infrared (IR) sensor payload, ground control equipment, including communications equipment and launch and recovery equipment, remote video terminal, two HMMWV's and a trailer, and one mobile maintenance facility for every three TUAV systems. The TUAV ACTD provides for the placement of systems in the hands of the operational users as quickly as possible for use in demonstrations and exercises. The ACTD process provides users with the opportunity to assess the military utility of the system thereby becoming informed buyers and applying lessons learned while evolving system requirement</p> <p><b>Acquisition Strategy:</b> The TUAV ACTD contract was competitively awarded with industry being advised of the possibility of follow-on production buys should the ACTD system demonstrate a military utility. The ACTD contract has an option for six (6) LRIP systems. The Outrider LRIP options supports a Full Rate Production (FRP) decision. The ACTD will address Joint Services (Army, Navy, Marine Corps) tactical UAV requirements and will validate military utility for each Service. The TUAV program will employ "cost as an independent variable" in acquiring any follow-on systems.</p> <p><b>FY 1997 Accomplishments:</b> FY97 efforts were funded under Program Element 0305154D (Tactical UAV's Defense-Wide)</p> <p><b>FY 1998 Planned Program:</b> FY98 efforts are funded under Program Element 0603003A (Aviation Advanced Technology).</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 75636 - Evaluate and execute MUA users lessons learned           <ul style="list-style-type: none"> <li>- Bridge Gap between ACTD &amp; LRIP (ie. Documentation, AV Improvements, Weight Reduction)</li> <li>- Continue CARS Integration and Demonstration</li> <li>- 2 Systems for Land &amp; Sea CONOPS Development (ie. NTC rotation)</li> <li>- Award LRIP contract</li> <li>- Transition to a formal acquisition program and begin OT&amp;E</li> </ul> </li> </ul> <p>Total 75636</p>											

Project D114

Page 1 of 2 Pages

Exhibit R-2 (PE 0305204A)

1478

Item 158

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT																				
7 - Operational System Development	0305204A Tactical Unmanned Aerial Vehicles		D114																				
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY 1998/1999 President's Budget</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>75636</td> </tr> </tbody> </table> <p>Change Summary Explanation:            Funding: The FY 1998 DoD Appropriations Act transferred Outrider funding to the Army in PE0603003A. Out-year funding was moved to PE0305204A via OSD direction to provide visibility to this DARPA program.</p> <p><b>C. Other Program Funding Summary:</b> Not Applicable.</p> <p><b>D. Schedule Profile:</b> Not Applicable.</p>					FY 1997	FY 1998	FY 1999	FY 1998/1999 President's Budget	0	0	0	Appropriated Value	0	0	0	Adjustments to Appropriated Value	0	0	0	FY 1999 President's Budget	0	0	75636
	FY 1997	FY 1998	FY 1999																				
FY 1998/1999 President's Budget	0	0	0																				
Appropriated Value	0	0	0																				
Adjustments to Appropriated Value	0	0	0																				
FY 1999 President's Budget	0	0	75636																				
Project D114	Page 2 of 2 Pages		Exhibit R-2 (PE 0305204A)																				

Item 158

1479

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0603778A Multiple Launch Rocket System Product Improvement Program									
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		61721	36171	20244	25148	40032	43851	80665	Continuing	655463	
D027 MLRS ILMS		25724	17842	0	0	0	0	0	0	66732	
D050 IMP FIRE CONT SYS-IFCS		25592	0	0	0	0	0	0	0	140149	
D054 EXTENDED RANGE ROCKET		10405	0	0	0	0	0	0	0	84804	
D090 MLRS HIMARS		0	0	0	2742	13517	22174	26031	Continuing	79464	
D093 MLRS JOINT TECHNICAL ARCHITECTURE-ARMY		0	825	2425	2043	1642	7932	6041	0	20908	
D783 MLRS SMART TACT RKT		0	0	0	0	0	8988	48593	Continuing	145681	
D784 GUIDED MLRS		0	17504	17819	20363	24873	4757	0	10414	95730	
<p><b>Mission Description and Budget Item Justification:</b> Expanding regional power threats require an evolutionary improvement program to maintain the effects of the Multiple Launch Rocket System (MLRS). This Product Improvement Program (PIP) provides for the Engineering and Manufacturing Development of an Extended Range Rocket (ER-MLRS), Improved Fire Control System (IFCS), Improved Launcher Mechanical System (ILMS), Guided MLRS Rocket (GMLRS), Joint Technical Architecture-Armey (JTA-A) (formerly designated MLRS Army Technical Architecture), High Mobility Artillery Rocket System (HIMARS), and MLRS Smart Tactical Rocket (MSTAR). The ER-MLRS project will enhance the capability of the existing MLRS by providing improvements in range, accuracy, effectiveness, and maneuver force safety. The IFCS corrects present and future supportability problems resulting from electronic component obsolescence in the existing design. The ILMS, by decreasing the slow to aim point timeline, will increase responsiveness, improve survivability, and enhance effectiveness in countering surface to surface missile fire. The GMLRS will greatly enhance the capability of the ER-MLRS by providing greater range and significantly enhanced accuracy. The improvement in accuracy and range will reduce the number of rockets required to defeat targets, thus dramatically reducing the logistics burden, and will increase crew survivability. The JTA-A will implement dual protocol capability and Force XXI Situational Awareness in M270A1 launchers and trainers. HIMARS will allow MLRS capability to be C-130 transportable by mounting one rocket or missile pod on a 5-ton truck. It gives early entry forces immediate fire support within a hot landing zone without waiting for heavy-lift aircraft. The MSTAR will be a guided MLRS rocket carrying terminally guided smart submunitions that will detect, classify, and engage stationary or moving armored and other high valued targets. These projects support development of upgrades to current production vehicles and are appropriately funded in Budget Activity 7.</p>											

Page 1 of 18 Pages

Exhibit R-2 (PE 0603778A)

1480

Item 159

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0603778A Multiple Launch Rocket System Product Improvement Program								D027	
		COST (in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D027	MLRS ILMS		25724	17842	0	0	0	0	0	0	66732
<p><b>A. Mission Description and Budget Item Justification:</b> Project D027 - Improved Launcher Mechanical System (ILMS): This project provides for the Engineering and Manufacturing Development (EMD) of the ILMS. The ILMS will decrease the stow to aim point timeline, enhance effectiveness in engaging and supporting the force, and increase MLRS platform survivability. The ILMS will replace selected hydraulic and mechanical components of the MLRS M270 launcher mechanical drive system. The time required for movement of the Launcher Loader Module from the stowed position to first rocket away will be reduced from 93 seconds to 16 seconds. Reload operations for twelve rockets will be reduced from 260 seconds to 160 seconds. These improvements will allow faster engagement of short dwell time targets and increase crew survivability on the firing point and reload area. Reduced operation and support costs are expected with this design. When combined with the Improved Fire Control System, the launcher will be designated as M270A1.</p> <p><b>Acquisition Strategy:</b> This is an ACAT III program with an EMD phase ending in 3QFY99 and fielding beginning in FY 00. A sole source contract for EMD was awarded to Lockheed Martin Vought Systems (LMVS) in August 1995.</p> <p><b>FY 1997 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 22110 Software Development Qualification, Hardware Delivery, Qualification Testing</li> <li>• 125 System Integration</li> <li>• 1075 Government Furnished Equipment Launcher Modifications</li> <li>• 2414 Minor Tasks Including In-House</li> <li>Total 25724</li> </ul> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 11235 System Integration/ Testing</li> <li>• 2997 Government Test Support</li> <li>• 2863 Minor Tasks Including In-House</li> <li>• 300 Government Furnished Equipment Launcher Modifications</li> <li>• 447 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 17842</li> </ul> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p>											

Page 2 of 18 Pages

Exhibit R-2 (PE 0603778A)

1481

Item 159

UNCLASSIFIED





**RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

February 1998

PE NUMBER AND TITLE

**0603778A Multiple Launch Rocket System Product Improvement Program**

	FY 1997	FY 1998	FY 1999
Operating expenses:			
Salaries and benefits	\$10,600,000	\$11,000,000	\$11,500,000
Pension contributions	1,000,000	1,000,000	1,000,000
Medical insurance	1,000,000	1,000,000	1,000,000
Dental insurance	500,000	500,000	500,000
Vacation pay	1,000,000	1,000,000	1,000,000
Travel	500,000	500,000	500,000
Telephone	500,000	500,000	500,000
Postage	500,000	500,000	500,000
Supplies	500,000	500,000	500,000
Repairs and maintenance	500,000	500,000	500,000
Utilities	500,000	500,000	500,000
Insurance	500,000	500,000	500,000
Depreciation	500,000	500,000	500,000
Other	500,000	500,000	500,000
Total operating expenses	\$16,500,000	\$17,000,000	\$17,500,000
Capital expenditures	\$500,000	\$500,000	\$500,000
Total	\$17,000,000	\$17,500,000	\$18,000,000

23310	11535
-------	-------

1929 3310

485  
299

17842 0

ations

## Contract

## Performing

Activity

EAC

1

1

Page 4 of 18 Pages

1483

Item 159

**UNCLASSIFIED**

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
7 - Operational System Development		D027	
PE NUMBER AND TITLE		PROJECT	
0603778A Multiple Launch Rocket System Product		D027	
Improvement Program			
	Total		
	Prior to		
	FY 1997	FY 1997	FY 1998
	20469	23310	11535
	2240	1929	3310
	457	485	2997
	23166	25724	17842
Subtotal Product Development			
Subtotal Support and Management			
Subtotal Test and Evaluation			
Total Project			
		Budget to	Total
		Complete	Program
			55314
			7479
			3939
			66732

1484

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0603778A Multiple Launch Rocket System Product Improvement Program								D050	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D050	IMP FIRE CONT SYS-IFCS	25592	0	0	0	0	0	0	0	140149	
<p><b>A. Mission Description and Budget Item Justification:</b> Project D050 - Improved Fire Control System (IFCS): The current MLRS Fire Control System provides position data, communication interface through which fire missions are received, processes data, controls the launcher, inputs mission critical data to the weapons and fires the weapon. This project provides for the Engineering and Manufacturing Development (EMD) of an IFCS, which will correct present and future supportability problems resulting from electronic component obsolescence in the existing design. This effort will result in reduced operation and support costs due to addition of built-in test equipment (BITE) to the circuit card and cable level and will provide growth capabilities for existing and future MLRS Family of Munitions (MFOM) weapon systems.</p> <p><b>Acquisition Strategy:</b> IFCS is an ACAT III program with an EMD phase ending in 2QFY98 and fielding beginning in FY 00. A sole source contract was awarded to Lockheed Martin Vought Systems (LMVS) in September 1992. Sole source was determined necessary due to the integration of the IFCS into the existing MLRS design, and due to the mechanical, electrical, and software interface with all rockets, missiles, and munitions utilizing the MLRS launcher. It is essential that the source be responsible for systems and perform the interface/design efforts for integrating the IFCS into the MFOM. The MLRS, as an internationally co-developed and co-produced system, must have computer software with common application to be utilized by the sponsor countries.</p> <p><b>FY 1997 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 20940 System Integration Tests, Flight Tests, Extended System Integration Tests</li> <li>• 1000 EMD Contract Award Fee</li> <li>• 450 White Sands Missile Range (WSMR) Test &amp; Software</li> <li>• 250 Fire Control Panel Trainer (FCPT)/Maintenance Trainer</li> <li>• 2952 Minor Tasks Including In-House</li> <li>Total 25592</li> </ul> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p>											

Project D050

Page 6 of 18 Pages

Exhibit R-2 (PE 0603778A)

1485

Item 159

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0603778A Multiple Launch Rocket System Product  
Improvement Program D050**B. Project Change Summary**

FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget

FY 1997  
25773  
25773  
-181  
25592

FY 1998  
0  
0  
0

FY 1999  
0  
0  
0

## Change Summary Explanation:

Schedule: The IFCS Program has experienced a 6-month schedule slippage into FY 98 because of software development problems, system architecture changes and late delivery of engineering and qualification hardware.

**C. Other Program Funding Summary****Missile Procurement, Army****Budget Activity 2:**

MLRS Launcher (C65900)

**Budget Activity 4:**

MLRS Initial Spares (CA0257)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
103565	118710	85387	158621	206351	217254	246184	Cont	Cont	
0	998	6862	6117	10485	12597	12407	Cont	Cont	

**D. Schedule Profile**

FY 1997  
2 3

FY 1998  
1 2 3 4

FY 1999  
2 3 4

1 2 3 4

X\*

Qualification Test

System Integration Test

Test Firings

MS IIIA

R&amp;D Contract Complete

\*Milestone Completed

Project D050

Page 7 of 18 Pages

Exhibit R-2 (PE 0603778A)

1486

Item 159

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
7 - Operational System Development					February 1998		D050		
					PE NUMBER AND TITLE		0603778A Multiple Launch Rocket System Product Improvement Program		
<b>A. Project Cost Breakdown</b>					FY 1997	FY 1998	FY 1999		
Contractor/EMD					21940				
Program Management Support					3052				
Developmental Test Support					600				
Total					25592	0	0		
<b>B. Budget Acquisition History and Planning Information</b>									
<b>Performing Organizations</b>									
Contract or	Contract								
Government	Method/Type	Award or	Performing	Total					
Performing	or Funding	Obligation	Activity	Prior to					
Activity	Vehicle	Date	EAC	FY 1997	FY 1997	FY 1998	FY 1999	Budget to	Total
				EAC				Complete	Program
<b>Product Development Organizations</b>									
LMVS	CPIF	Sep 92		97793	21940				119733
<b>Support and Management Organizations</b>									
Support Contract									
MLRS Project Ofc				6278	1745				8023
RDEC-AMCOM				7313	1307				8620
<b>Test and Evaluation Organizations</b>									
Develop Test Supp				1377	600				1977
<b>Government Furnished Property</b>									
	Contract								
	Method/Type	Award or	Delivery	Total					
Item	or Funding	Obligation	Date	Prior to					
Description	Vehicle	Date		FY 1997	FY 1997	FY 1998	FY 1999	Budget to	Total
								Complete	Program
<b>Product Development Property</b>									
GFE	CPIF	Sep 92		1796					1796
<b>Support and Management Property: None</b>									
<b>Test and Evaluation Property: None</b>									
Project D050					Page 8 of 18 Pages		Exhibit R-3 (PE 0603778A)		
					1487		Item 159		

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
7 - Operational System Development	0603778A Multiple Launch Rocket System Product Improvement Program	D050		
	Total			
	Prior to			
	FY 1997	FY 1997	FY 1998	FY 1999
	99589	21940		
	13591	3052		
	1377	600		
	114557	25592		
			Budget to	Total
			Complete	Program
				121529
				16643
				1977
				140149
	Subtotal Product Development			
	Subtotal Support and Management			
	Subtotal Test and Evaluation			
	Total Project			

Project D050

Page 9 of 18 Pages

Exhibit R-3 (PE 0603778A)

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998											
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT												
7 - Operational System Development		0603778A Multiple Launch Rocket System Product Improvement Program								D054												
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost												
D054	EXTENDED RANGE ROCKET	10405	0	0	0	0	0	0	0	84804												
<p><b>A. Mission Description and Budget Item Justification:</b> Project D054 - Extended Range MLRS (ER-MLRS): This project provides for the Engineering and Manufacturing Development (EMD) of an ER-MLRS. The ER-MLRS will enhance the capability of the existing MLRS by providing improvements in range, accuracy, effectiveness, and maneuver force safety.</p> <p><b>Acquisition Strategy:</b> The ER-MLRS acquisition strategy is a streamlined product improvement program which permitted entering Low Rate Initial Production (LRIP) (funded with Missile Procurement) and subsequent Full-Scale Production after completion of a 54-month EMD program. The primary objective of the EMD phase was to develop and qualify a successor rocket to the MLRS basic M26 with extended range capability and with minimum impact on existing basic MLRS companion hardware and software. This effort incorporated the results of other development efforts for a new submunition with a self-destruct fuze to reduce the hazards to friendly maneuver dud rate and for a no-load detent system to sustain accuracy at increased ranges. The acquisition alternative most advantageous to the Government was for a sole source EMD contract to the system prime contractor, Lockheed Martin Vought Systems (LMVS), containing a requirement to increase subcontract competition for subsystems and components.</p> <p><b>FY 1997 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 3346 Software Integration &amp; Test</li> <li>• 3009 Fuze Development</li> <li>• 1619 Software IV&amp;V Testing and Audits</li> <li>• 2431 Minor Tasks Including In-House and Milestone Decision Review III Preparation</li> <li>Total 10405</li> </ul> <p><b>FY 1998 Planned Program:</b> Project not funded in FY 1998</p> <p><b>FY 1999 Planned Program:</b> Project not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table border="0"> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> </tr> </table>											FY 1998/1999 President's Budget	FY 1998	FY 1999	Appropriated Value	0	0	Adjustments to Appropriated Value			FY 1999 President's Budget	0	0
FY 1998/1999 President's Budget	FY 1998	FY 1999																				
Appropriated Value	0	0																				
Adjustments to Appropriated Value																						
FY 1999 President's Budget	0	0																				

Exhibit R-2 (PE 0603778A)

Page 10 of 18 Pages

Project D054

1489

Item 159

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
7 - Operational System Development		0603778A Multiple Launch Rocket System Product Improvement Program						February 1998	D054
C. <u>Other Program Funding Summary</u>									
Missile Procurement, Army									
Budget Activity 2:									
ER-MLRS (C65402)									
D. <u>Schedule Profile</u>									
IFCS Rkt Msl Guid Req Final Qual Test									
Design Verification Tests (SDF Qual)									
Contract Complete									
*Milestone Completed									

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--





UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0603778A Multiple Launch Rocket System Product

D093

Improvement Program

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D093 MLRS JOINT TECHNICAL ARCHITECTURE-ARMY	0	825	2425	2043	1642	7932	6041	0	20908

**A. Mission Description and Budget Item Justification:** Project D093 - MLRS Joint Technical Architecture - Army (JTA-A): MLRS JTA-A will integrate the Force XXI/JTA-A mandated 188-220A protocol and convert existing MLRS fire support messages to Variable Message Format (VMF) for M270A1 launchers. JTA-A hardware and software development effort will implement Force XXI situational awareness and JTA-A soldier-computer interface mandates for M270A1 launchers. Increased Force XXI capabilities include addition of a digitized map, tactical internet connectivity, and situational awareness.

**Acquisition Strategy:** The JTA-A standards will be implemented for the M270A1 launcher to perform the Force XXI capabilities. The M270A1 FCS will implement software reuse and OTS hardware to the maximum extent possible within hardware capabilities and M270A1 operational requirements.

**FY 1997 Planned Program:** Project not funded in FY 1997

**FY 1998 Planned Program:**

- 704 Developed New Communication Interface
- 100 Minor Tasks Including In-House
- 21 Small Business Innovative Research/Small Business Technology Programs
- Total 825

**FY 1999 Planned Program:**

- 1197 Develop VMF and Dual Protocol Logic Software
- 500 Development Testing
- 728 Minor Tasks Including In-House
- Total 2425

**B. Project Change Summary**

FY 1998/1999 President's Budget  
Appropriated Value  
Adjustments to Appropriated Value  
FY 1999 President's Budget

FY 1997	FY 1998	FY 1999
0	863	2617
	863	
	-38	
0	825	2425

Project D093

Page 13 of 18 Pages

Exhibit R-2 (PE 0603778A)

1492

Item 159

UNCLASSIFIED



**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE	
7 - Operational System Development				0603778A Multiple Launch Rocket System Product D093	
Improvement Program					
A. Project Cost Breakdown					
Contractor/EMD				FY 1997	FY 1998
Program Management Support				725	1525
Developmental Test Support				100	400
Total				825	2425
B. Budget Acquisition History and Planning Information					
Performing Organizations					
Contractor or	Method/Type	Award or	Performing	Project	Total
Government	or Funding	Obligation	Activity	Office	Prior to
Activity	Vehicle	Date	EAC	EAC	FY 1997
Product Development Organizations					
TBD	CPIF	May 98			
Support and Management Organizations					
Support Contract					
MLRS Project Ofc					
RDEC-AMCOM					
Test and Evaluation Organizations					
Develop Test Supp					
Government Furnished Property: Not Applicable					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					

Item 159

1494

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0603778A Multiple Launch Rocket System Product Improvement Program								D784	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
D784	GUIDED MLRS	0	17504	17819	20363	24873	4757	0	10414	95730	
<p><b>A. Mission Description and Budget Item Justification:</b> Project D784 - Guided Multiple Launch Rocket System (GMLRS): This project provides for the Engineering and Manufacturing Development (EMD) of a GMLRS that will greatly enhance the capability of the existing MLRS by providing greater range and significantly enhanced accuracy. Since fewer rockets are required to defeat a target, the logistics burden also will be reduced. The GMLRS will result in reduced mission times and increased survivability of the system.</p> <p><b>Acquisition Strategy:</b> The GMLRS acquisition strategy is a streamlined product improvement program which permits entering Low Rate Initial Production (LRIP) (funded with Missile Procurement) and subsequent Full-Scale Production, after completion of a 60-month EMD program. The primary objective of the EMD phase is to develop a rocket with greater range and significantly enhanced accuracy with a minimum impact on existing MLRS companion hardware and software. This effort will incorporate the results of other development efforts for a modified extended range rocket motor for increased range. The acquisition alternative most advantageous to the government is a sole source EMD contract to the system prime contractor, Lockheed Martin Vought Systems (LMVS).</p> <p><b>FY 1997 Planned Program:</b> Project not funded in FY 1997</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 12443 Simulation Development, Define and Design Code Software, System Trade Studies</li> <li>• 1827 Wind Tunnel Testing</li> <li>• 2795 Minor Tasks Including In-House</li> <li>• 439 Small Business Innovative Research /Small Business Technology Transfer Programs</li> <li>Total 17504</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 13719 Assembly of Components, Component Lab Testing and Static Tests</li> <li>• 800 White Sands Missile Range Test Studies</li> <li>• 400 Independent Analysis</li> <li>• 2900 Minor Tasks Including In-House</li> <li>Total 17819</li> </ul>											

Project D784

Page 16 of 18 Pages

Exhibit R-2 (PE 0603778A)

1495

Item 159

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>					
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>				
<b>7 - Operational System Development</b>	<b>0603778A Multiple Launch Rocket System Product Improvement Program</b>				
	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>
<b>B. Project Change Summary</b>					
FY 1998/1999 President's Budget Appropriated Value	0	11208 18208	FY 1999 19228		
Adjustments to Appropriated Value		-704			
FY 1999 President's Budget	0	17504	17819		
Change Summary Explanation: Funding: FY 1998 project funding increased by Congress (+7000); undistributed Congressional reduction (-704).					
<b>C. Other Program Funding Summary</b>	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>
<b>Missile Procurement, Army</b>					
<b>Budget Activity 2:</b>					
ER-MLRS (C65402)	45318	19327	16513	17345	18378
				24495	59732
					Cont
<b>D. Schedule Profile</b>					
Contract Award	1	2	3	4	5
Simulation Development		FY 1997	FY 1998	FY 1999	
Wind Tunnel Test		2	X	2	3
Preliminary Design Review (PDR)		3	X	4	5
Software Critical Design Review					X

Exhibit R-2 (PE 0603778A)  
  
Page 17 of 18 Pages  
  
Project D784

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY					
7 - Operational System Development					
PE NUMBER AND TITLE					
0603778A Multiple Launch Rocket System Product Improvement Program					D784
<b>A. Project Cost Breakdown</b>					
Contractor/EMD	FY 1997	FY 1998	FY 1999		
Program Management Support		14115	15128		
Developmental Test Support		3031	1744		
Total	0	358	947		
		17504	17819		
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contract or	Project	Total			
Government	Office	Prior to			
Performing	EAC	FY 1997	FY 1998	FY 1999	Total
Activity					Program
Method/Type					
or Funding					
Vehicle					
Award or					
Obligation					
Date					
Product Development Organizations					
TBD			14115	15128	74143
CPIF					
Mar 98					
Support and Management Organizations					
MLRS Project Ofc			2056	867	8723
RDEC-AMCOM			975	877	7152
Test and Evaluation Organizations					
Develop Test Supp			358	947	5712
<b>Government Furnished Property: Not Applicable</b>					
Subtotal Product Development			14115	15128	74143
Subtotal Support and Management			3031	1744	15875
Subtotal Test and Evaluation			358	947	5712
Total Project			17504	17819	95730

Project D784

Page 18 of 18 Pages

Exhibit R-3 (PE 0603778A)

1497

Item 159

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE  
February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0708045A Army Industrial Preparedness

Manufacturing Technology

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost									
DE25 Manufacturing Technology (ManTech)	45006	64278	30511	31487	31759	31699	31789	Continuing	Continuing
DE26 Weapon Systems Modernization Software Maintenance	45006	32009	14511	15187	15759	16099	16489	Continuing	Continuing
DE27 Reliability, Maintainability and Sustainability (RM&S)	0	32269	0	0	0	0	0	0	32269
DE31 National Defense Center for Environmental Excellence (NDC EE)	0	0	11000	16300	16000	15600	15300	Continuing	Continuing
	0	0	5000	0	0	0	0	0	5000

**Mission Description and Budget Item Justification:** This program element comprises four projects: Manufacturing Technology (ManTech); Weapon Systems Modernization Software Maintenance; Reliability, Maintainability and Sustainability; and the National Defense Center for Environmental Excellence (NDC EE). The goal of the Army ManTech program is to provide essential manufacturing technologies that will enable the affordable production and sustaining of future weapon systems. Objectives include development of advanced manufacturing processes, equipment and systems; enhancement in quality while achieving reduction in cost of Army materiel; and transferring improved manufacturing technologies to the industrial base. The ManTech program is especially important in the current environment because of the large decline in weapon system production investments since much manufacturing technology was formerly accomplished within individual production programs. Projects selected to be funded under this program have the potential for high payoff across the spectrum of Army weapon systems as well as significant impact on national manufacturing issues and the U.S. industrial base. The Weapon Systems Modernization Software Maintenance project provides funding for modernization programs in which post-production embedded weapon system software must be upgraded and/or enhanced, as well as life cycle software engineering in the areas of tactical and satellite communications, intelligence and electronic warfare (IEW), avionics command and control (C2), fire support (FS), maneuver control (MC), and tactical fusion (TF). The work performed in project DE26 was formerly funded in the Operations and Maintenance, Army appropriation. The mission and associated funding for all software maintenance that provides performance enhancements and upgrades to weapons systems were transferred to the RDT&E, Army appropriation in FY 1998 in accordance with the criteria set forth in DOD 7000.14-R Financial Management Regulation, Volume 2A, Budget Presentation and Formulation, Chapter 1 Guidance. Beginning in FY1999, based on the determination of Headquarters, Department of the Army and the Deputy Chief of Staff for Operations and Plans requirements process, the funding for DE26 has been distributed into the appropriate RDT&E accounts of those specific systems requiring performance enhancements and upgrades in software. The Reliability, Maintainability and Sustainability (RM&S) program funds projects that reduce the cost of ownership through weapon system or equipment modifications to yield improvements in RM&S. Projects were evaluated for funding based on recognized principles of economic analysis, including the use of Savings-to-Investment analysis. The National Defense Center for Environmental Excellence (NDC EE) Technology is a Congressionally directed project which has the mission to demonstrate and export new

Page 1 of 12 Pages

Exhibit R-2 (PE 0708045A)

1498

Item 160

UNCLASSIFIED



UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>
BUDGET ACTIVITY <b>7 - Operational System Development</b>	PE NUMBER AND TITLE <b>0708045A Army Industrial Preparedness Manufacturing Technology</b>	
<p>environmentally-acceptable technology to the industrial base; train the industrial base on the use of the new technology; perform research and development, where necessary, to mature a new technology prior to demonstrating and exporting the new technology to the industrial base; and assist DoD in technology transfer. The center's goal is to resolve the environmental technology and management requirements of the DoD community and commercial industrial base.</p> <p>This program element is assigned to Budget Activity 7 since it includes projects that support the development of processes in technological feasibility assessment, weapon systems in development or production, and modifications/upgrades to, or sustainment of, fielded systems.</p>		
Page 2 of 12 Pages		Exhibit R-2 (PE 0708045A)

Item 160

1499

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0708045A Army Industrial Preparedness Manufacturing Technology								DE25	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE25 Manufacturing Technology (ManTech)		45006	32009	14511	15187	15759	16099	16489	Continuing	Continuing	

**A. Mission Description and Justification:** The goal of the Army Manufacturing Technology (ManTech) Program is to provide essential manufacturing technologies that will enable the affordable production and sustainment of future weapon systems. Objectives include development of advanced manufacturing processes, equipment and systems; enhancement in quality while achieving reduction in cost of Army materiel; and transferring improved manufacturing technologies to the industrial base. The ManTech program is especially important in the current environment because of the large decline in weapon system production investments since much manufacturing technology was formerly accomplished within individual production programs. Projects selected to be funded under this program have the potential for high payoff across the spectrum of Army weapon systems as well as significant impact on national manufacturing issues and the U.S. industrial base.

This project is assigned to Budget Activity 7 since it supports the development of processes in technological feasibility assessment, weapon systems in development or production, and modifications/upgrades to or sustainment of fielded systems.

**Acquisition Strategy:** The Army ManTech program is currently undergoing a major revision in which there will be significantly fewer projects (and contracts) of less than \$300K than in the past. It is anticipated that future ManTech initiatives will require contracts of greater dollar value, focused on making more significant impact on affordability of weapon systems. The ManTech program uses firm fixed price contracts, cooperative research and development agreements, cost sharing arrangements, and utilization of DoD manufacturing centers of excellence to complete tasks.

**FY 1997 Accomplishments:**

- 6796 - Air Vehicles: Demonstrated low-cost Beryllium Aluminum investment casting process reducing machining time by 60% on the Comanche electro-optical sensor system; demonstrated co-cure process for composites with application to the Longbow Apache mast mounted assembly resulting in 15% weight reduction in radar mast assembly and demonstrated low cost fabrication and tooling technique for helicopter secondary structures; operated full scale factory for gear manufacturing technology and established a government, industry and academia coalition to solve manufacturing problems through an Instrumented Factory for Gears Center (INFAC) to reduce manufacturing costs by 15% and cycle times by 90%.
- 2535 - Ground Vehicles: Weld joints were developed for simulating a titanium turret design, which was used for evaluating the performance of the weld joints and performance of titanium in a turret box design; demonstrated affordability of composite armored vehicle technology to include manufacturing process flow and production feasibility summary with upper hull technology concept adopted by PM Crusader; developed demonstration articles utilizing ductile iron for vehicle track shoes for extended track life.

Project DE25

Page 3 of 12 Pages

Exhibit R-2 (PE 0708045A)

1500

Item 160

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0708045A Army Industrial Preparedness Manufacturing Technology	DE25	
<p><b>FY 1997 Accomplishments: (continued)</b></p> <ul style="list-style-type: none"> <li>• 10650 - Missiles: Developed manufacturing processes for advanced multichip modules, interconnects, optoelectronics and assembly areas utilizing a government, industry and academia partnership to reduce the costs of missile seekers; identified 11 improvement areas and developed six improvements to reduce the cost of manufacturing millimeter wave transceivers for missile seekers; developed and demonstrated Internet web based integrated product/process development tools to support weapon system integrated product teams; completed review of domestic manufacturing capability and conducted activities to position industry to meet system requirements utilizing polyacrylonitrile (PAN) based, ultra high modulus, high strength carbon fibers for light weight, high performance, and stealthy structural applications including missile airframe and kinetic kill vehicles, aircraft airframes, and military spacecraft and satellite structures.</li> <li>• 1275 - Electronics: Reduced cycle time by over 70% for linear drive coolers used in 2nd generation forward looking infra-red horizontal technology integration systems to include Javelin, Abrams, and Comanche; utilized lithium-ion and other battery packaging technologies in military-unique form/fit applications for advanced non-metallic rechargeable batteries; proved out physics-of-failure approach to up-front design and manufacturing of rotary wing communications radios.</li> <li>• 21178 - Munitions: Identified propellant mixer technology process improvements which resulted in equipment and facility modifications for improved production; established a munitions enterprise consortium to address totally integrated munitions engineering and identified tantalum powder material process to produce penetrators, advanced tungsten warheads and flexible energetics processing; identified major cost drivers and evaluated integrated circuit technologies for best manufacturing processes for the Objective Individual Combat Weapon; utilized the DoD center of excellence for optics manufacturing to leverage DARPA efforts in aspheric and conformal optics development and complement this effort with advancing optics finishing technology and reflective/refractive optics for improvements in day and night vision devices; adapted software to support all computer numerically controlled (CNC) machinery development and changes and conducted industrial demos to promote and transition Optacam technology to US optics industry.</li> <li>• 2572 - Materiel and Support Systems: Demonstrated smartweave sensor technologies on the Crusader ballistic shield which provided improved composite part processing and reduced production costs; demonstrated the capability for reduction of titanium fabrication time for lot size of one on low volume production applications such as missiles air vehicles and ground vehicles; identified ten areas of improved rotary wing sustainment and focused efforts on three processing areas to include remanufacturing of rotor blades, rotorcraft parts and composite components; demonstrated remanufacturing capabilities using robotic welding; established improved methodology for producing semi-dry rations for the warfighter.</li> </ul> <p>Total 45006</p>			
Project DE25		Exhibit R-2 (PE 0708045A)	
Page 4 of 12 Pages		Item 160	

1501

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b> February 1998
<b>BUDGET ACTIVITY</b> 7 - Operational System Development	<b>PE NUMBER AND TITLE</b> 0708045A Army Industrial Preparedness Manufacturing Technology	<b>PROJECT</b> DE25
<p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>- Fiscal year 1998 began a transition year for the ManTech Program. During FY97 the Army decided to restructure the program to focus more pointedly on those manufacturing technology objectives that promise to make significant impact on reducing the cost of future weapon systems. Under the new strategy, there will be fewer of the small ManTech contracts previously found supporting broad-based commodity area objectives. Replacing these will be major objective-based projects (\$1M to \$3M per year for duration of three to five years) selected by Army leadership for their potential to increase affordability of multiple systems in development or in the field. Full implementation of the revised program will occur in FY99. Projects other than the initiative on sensors described below, either will be brought to conclusion or incorporated in FY99 major focused ManTech initiatives.</li> <li>- Initiate the first phase of a five year major effort to develop the manufacturing technologies required for cooled and uncooled infrared staring sensors to include process development in uncooled and cooled focal plane arrays (FPAs) and improvements in infrared optics manufacturing. Goals are to replace costly uncooled FPA sensors with significantly less expensive uncooled versions in as many weapon systems as possible and to make significant advances in the manufacturing technology that will make cooled FPAs more affordable for those systems requiring the highest level of sensitivity and resolution.</li> <li>- Ground Vehicles: A box design will be tested against ballistic threats at ARL Weapon Technology Directorate at Aberdeen Proving Grounds and the titanium welding processes will be established for enabling the capability to manufacture titanium turrets that weigh 20% less than conventional turrets.</li> <li>- Air Vehicles: For the Instrumented Factory for Gears, continue development of improved heat treatment processing, conduct final demonstration of prediction and control of heat treat distortion of gears, demonstrate automated deburring of spiral bevel gears and demonstrate digital optical-based inspection system for gears; continue development and demonstration of improved airframe manufacturing technology using composite manufacturing processes for helicopter dynamic rotor components; develop a prototype universal static balance system for helicopter main rotor blades; develop heat curing blanket for CH-47 and UH-60 main rotor blade leading edge surfaces at Corpus Christi Army Depot.</li> <li>- Missiles: Develop and implement Computer-Aided Design/Computer-Aided Engineering (CAD/CAE) millimeter-wave (MMW) design tools for at least one Army missile system; continue development of manufacturing process and testing improvements for multi-chip modules; complete development of advanced integrated product and process design aides and simulation systems for missiles; and continue cost reduction process improvements to traveling wave tube manufacturing; strengthen U.S. printed circuit board industry and its ability to support military needs through an Electronic Circuit Board Manufacturing Development Center.</li> <li>- Electronics: Complete process improvements to the mid and mid-to-high performance focal plane array dewar assembly.</li> <li>- Munitions: Continue processing technology development for pyrotechnic materials, optimize process parameters for manufacture of fine particle explosives and coated energetics, and complete process development efforts for Modular Artillery Charge System (MACS); continue manufacturing development of the Objective Individual Combat Weapon System; prototype and prove out a second generation CNC machine for Magnetorheological Finishing (MRF) of optics and precise correction of non-symmetric errors; apply deterministic optics fabrication techniques to specific military optics</li> </ul>		

Project DE25

Page 5 of 12 Pages

Exhibit R-2 (PE 0708045A)

1502

Item 160

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0708045A Army Industrial Preparedness Manufacturing Technology	DE25	
<p><b>FY 1998 Planned Program: (continued)</b></p> <p>manufacturing problems; prototype and validate performance of a second generation machine for fabrication of optical prisms; develop optomechatronic assembly techniques; accelerate munitions manufacturing technology in the areas of composites, electronics and energetics; develop totally integrated munitions engineering through development of process scheduling and shop floor management tools.</p> <ul style="list-style-type: none"> <li>• 802</li> <li>• 32009</li> <li>• Total</li> </ul>			
<p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 1000 - Continue major focused effort in cooled and uncooled FPA development to include manufacturing properties of electro-optical materials; develop process to reduce/climate yield limiters, reduce cycle times, improve performance, transition to larger uncooled focal plane arrays (320x240 to 640x480), reduce power consumption, and reduce cost by 10-20%.</li> <li>• 3000 - Initiate a major 5-year effort focusing on knowledge and process tools for manufacturing affordable composite structures to reduce cost and time to manufacture large scale composite components for rotary wing vehicles, ground vehicles and munitions by demonstrating models for optimal fabrication, closed loop cure process control, and resin flow simulation accuracy to ultimately reduce labor costs by 30%.</li> <li>• 1700 - Initiate the first phase of a major 3-year effort in the development of coatings that will be used during manufacturing of military application integrated circuits subjected to long term unpowered storage environments common to missiles and increasing the yield by 10%.</li> <li>• 600 - Ground Vehicles: The titanium turret design will be computer modeled to reduce weight and maximize the protection and a prototype turret will be fabricated to demonstrate and verify the performance during operation and firing of the gun system.</li> <li>• 650 - Air Vehicles: Demonstrate a preventive and predictive maintenance expert system focused on whirl towers, engine and transmission test cells and automatic test equipment for UH-60 and CH-47 components; demonstrate universal static balance system for helicopter rotor blades to include AH-64, UH-60, CH-47, UH-1, AH-1 and OH-58 which will reduce cycle times by 15%.</li> <li>• 2700 - Missiles: Fabricate, integrate, assemble, and test five Longbow Cost Reduction Program Integrated Product and Process Design (IPPD) transceivers on the flexible work cell pilot production line; demonstrate 5X reduction in multichip module substrate and assembly cost through participation in Georgia Tech Packaging Research Center and insert smart FPA and dual-color technology into Stinger Block II missile production; implementation testbeds will be extended to demonstrate advanced integrated process team tools to the missile sector.</li> <li>• 1125 - Munitions: Demonstrate technology to minimize seasonal variations of the solvent and thermal content of the propellant blocks, providing for a more uniform products, greater yields and less rework; demonstrate magnetorheological finishing deterministic microgrinding processes for optics components.</li> <li>• 2086 - Materiel and Support Systems: Complete process optimization and demonstrate manufacturing capability for decontamination enzymes; develop digital data extraction technology and an automated reverse engineering fixture for remanufacturing capability of printed circuit boards.</li> </ul>			

Project DE25

Page 6 of 12 Pages

Exhibit R-2 (PE 0708045A)

1503

Item 160

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																					
7 - Operational System Development	0708045A Army Industrial Preparedness Manufacturing Technology	DE25																					
<p><b>FY 1999 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>1650 - Funding to be designated to manufacturing demonstrations approved by the Manufacturing Technology Technical Council (MTTC) during 2Q FY98. Likely technology demonstration areas include munitions, sustainment and welding.</li> </ul> <p>Total 14511</p>																							
<p><b>B. Project Change Summary</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> </tr> </thead> <tbody> <tr> <td>FY1998/1999 President's Budget</td> <td>47819</td> <td>11029</td> <td>15211</td> </tr> <tr> <td>Appropriated Value</td> <td>47819</td> <td>33029</td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>-3836</td> <td>-1020</td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>45006</td> <td>33009</td> <td>14511</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	FY1998/1999 President's Budget	47819	11029	15211	Appropriated Value	47819	33029		Adjustments to Appropriated Value	-3836	-1020		FY 1999 President's Budget	45006	33009	14511
	FY 1997	FY 1998	FY 1999																				
FY1998/1999 President's Budget	47819	11029	15211																				
Appropriated Value	47819	33029																					
Adjustments to Appropriated Value	-3836	-1020																					
FY 1999 President's Budget	45006	33009	14511																				
<p>Change Summary Explanation: Funding: FY 1997 - Funds reprogrammed to higher priority requirements (-1644); reprogrammed for SBIR/STTR (-1169). FY 1998 - Congressional add (+22000); Congressional undistributed reductions (-1020).</p>																							
Project DE25		Exhibit R-2 (PE 0708045A)																					
Page 7 of 12 Pages		Item 160																					

1504

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0708045A Army Industrial Preparedness Manufacturing Technology								DE26	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE26 Weapon Systems Modernization Software Maintenance		0	32269	0	0	0	0	0	0	32269	

**A. Mission Description and Justification:** The Weapon Systems Modernization Software Maintenance project provides funding for modernization efforts in which post-production embedded weapon system software must be upgraded and/or enhanced. This project provides life cycle software engineering support for weapon systems in the areas of tactical and satellite communications, intelligence and electronic warfare (IEW), avionics command and control (C2), fire support (FS), maneuver control (MC), and tactical fusion (TF). The project provides the capability to enhance or improve system software interoperability, integration and testing for command, control, communications, computer, intelligence, electronic warfare, and sensor (C4IEWS) functions in a continuous life cycle evaluation/certification process. Software changes funded under this project expands or upgrades the performance of the selected weapon systems, as well as ensure system interoperability. The project is managed by the Army Materiel Command (AMC). Prior to FY 1998 the work performed in project DE26 was funded in the Operations and Maintenance, Army appropriation. The mission and associated funding for all software maintenance that provides performance enhancements and upgrades to weapons systems were transferred to the RDT&E, Army appropriation in FY 1998 in accordance with the criteria set forth in DOD 7000.14-R Financial Management Regulation, Volume 2A, Budget Presentation and Formulation, Chapter 1 Guidance. Beginning in FY 1999, based on the determination of Headquarters, Department of the Army and the Deputy Chief of Staff for Operations and Plans requirements process, the funding for DE26 has been distributed into the appropriate RDT&E accounts of those specific systems requiring performance enhancements and upgrades in software.

This project is assigned to Budget Activity 7 since it supports the development of processes in technological feasibility assessment, weapon systems in development or production, and modifications/upgrades to, or sustainment of, fielded systems.

**FY1997 Accomplishments:** Program not funded in FY 1997

**FY 1998 Planned Program:**

- 31460 - Modify fire support command and control system software to accommodate new munitions and or doctrine.
- Modify navigation and position reporting weapon system software to accommodate changes in mapping reference grids supplied by the National Imagery and Mapping Agency (NIMA).
- Modify terrain dependent weapon system software platforms to accommodate changes in electronic terrain data supplied by the NIMA.
- Modify software and/or databases in selected weapons systems to identify and defeat new, different, or re-deployed electronic threats employed by adversaries in particular regions of the world, such as laser or radar engagement systems used by enemy munitions and missiles, or communications jammers

Project DE26

Page 8 of 12 Pages

Exhibit R-2 (PE 0708045A)

1505

Item 160

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																								
BUDGET ACTIVITY	PE NUMBER AND TITLE																										
7 - Operational System Development	0708045A Army Industrial Preparedness Manufacturing Technology	February 1998	DE26																								
<p><b>FY 1998 Planned Program: (continued)</b></p> <ul style="list-style-type: none"> <li>- Modify weapon system application software in existing systems to accommodate upgrades of Commercial Off The Shelf (COTS) products required by obsolescence of older products no longer support by vendors. Accommodate upgrades of COTS to ensure continuation of COTS vendor maintenance contracts necessary to sustain weapon system reliability.</li> <li>- Modify weapon system software as required to ensure integrity of operations when the systems are re-deployed to new and unfamiliar or unanticipated regions of the world in which the original software and data was not designed to operate.</li> <li>- Modify weapon systems software to accommodate interfaces with new and/or re-deployed NATO and Allied systems.</li> <li>- Modify weapon systems software to accommodate short term critical user needs to increase capability and/or lethality required to meet operational mission needs and combat readiness.</li> <li>- Incorporate weapon systems software enhancements which will provide the ability to manage data exchange between planning, monitoring and controlling subsystems, and which will provide a common integrated Man-Machine Interface (MMI) spanning these subsystems to achieve desired level of interoperability.</li> <li>- Modernize, and/or develop new software interfaces between weapon system platforms to accommodate or improve interoperability for force multiplication; install and demonstrate new capabilities as required.</li> <li>- Incorporate weapon systems software enhancements which will provide the ability to manage data exchange between planning, monitoring and controlling subsystems, and which will provide a common integrated Man-Machine Interface (MMI) spanning these subsystems to achieve desired level of interoperability.</li> <li>- Incorporate into selected existing weapon systems software enhancements which will provide the ability to communicate information over secure network environments and increase the capability of existing secure communications links.</li> <li>- Small Business Innovation Program/Small Business Technology Transfer Program</li> </ul> <table> <tr> <td>809</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>32269</td> <td></td> <td></td> </tr> </table> <p><b>FY1999 Planned Program:</b> Program not funded in FY 1999</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>33297</td> <td>34875</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td>0</td> <td>33297</td> <td></td> </tr> <tr> <td>FY1999 President's Budget</td> <td>0</td> <td>-1028</td> <td>0</td> </tr> </table> <p>Change Summary Explanation: Funding: FY1999 (-34875) has been distributed to accounts of specific weapon systems requiring software performance enhancements and/or upgrades.</p>				809				Total	32269			FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	33297	34875	Adjustments to Appropriated Value	0	33297		FY1999 President's Budget	0	-1028	0
809																											
Total	32269																										
FY1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																								
Appropriated Value	0	33297	34875																								
Adjustments to Appropriated Value	0	33297																									
FY1999 President's Budget	0	-1028	0																								
Project DE26		Exhibit R-2 (PE 0708045A)																									
Page 9 of 12 Pages		Item 160																									

1506

UNCLASSIFIED



## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998																
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																
7 - Operational System Development		0708045A Army Industrial Preparedness Manufacturing Technology								DE27																
COST (in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																
DE27	Reliability, Maintainability and Sustainability (RM&S)	0	0	11000	16300	16000	15600	15300	Continuing	Continuing																
<p><b>A. Mission Description and Justification:</b> The Reliability, Maintainability and Sustainability (RM&amp;S) program funds projects that reduce the cost of ownership through weapon system or equipment modifications to yield improvements in RM&amp;S. Projects were evaluated for funding based on recognized principles of economic analysis, including the use of Savings-to-Investment analysis.</p> <p><b>FY 1997 Accomplishments:</b> Program funded in Other Procurement, Army appropriation, SSN MA0465.</p> <p><b>FY 1998 Planned Program:</b> Program funded in Other Procurement, Army appropriation, SSN MA0465.</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>1800 - Redesign the AVENGER remote control unit system and cable to improve the reliability and survivability, and replace the current cable and connector with more reliable and less bulky fiber optic cable.</li> <li>9200 - Design and procure long lead time items, develop test plans, complete component fabrication and qualification testing for a CH-47 low maintenance rotor hub which will have 75% fewer parts and a reduction in special tooling resulting in extended time between overhauls.</li> </ul> <p>Total 11000</p> <p><b>B. Project Change Summary</b></p> <table> <tr> <td>FY 1998/1999 President's Budget</td> <td>FY 1997</td> <td>FY 1998</td> <td>FY 1999</td> </tr> <tr> <td>Appropriated Value</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>11000</td> </tr> </table> <p>Change Summary Explanation: Funding : FY 1999 - RM&amp;S program restructured from Other Procurement, Army appropriation to RDT&amp;E appropriation to properly align funding.</p>											FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999	Appropriated Value	0	0	0	Adjustments to Appropriated Value				FY 1999 President's Budget	0	0	11000
FY 1998/1999 President's Budget	FY 1997	FY 1998	FY 1999																							
Appropriated Value	0	0	0																							
Adjustments to Appropriated Value																										
FY 1999 President's Budget	0	0	11000																							

Project DE27

Page 10 of 12 Pages

Exhibit R-2 (PE 0708045A)

1507

Item 160

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0708045A Army Industrial Preparedness Manufacturing Technology								DE31	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
DE31	National Defense Center for Environmental Excellence (NDCEE)	0	0	5000	0	0	0	0	0	5000	
<p><b>A. Mission Description and Justification:</b> This Congressionally mandated project is managed by the Army on behalf of the Office of the Deputy Under Secretary of Defense for Environmental Security (DUSD-ES). The mission of the NDCEE is four-fold: (1) Demonstrate and export new environmentally-acceptable technology to the industrial base; (2) train the industrial base on the use of the new technology; (3) perform research and development, where necessary, to mature a new technology prior to demonstrating and exporting the new technology to the industrial base and (4) assist DoD in technology transfer. The NDCEE, which is located in Johnstown, Pennsylvania, has the goal of resolving the environmental technology and management requirements of the DoD community and commercial industrial base. The primary in-house development agency is the U.S. Army Materiel Command's Armament Research, Development, and Engineering Center, Picatinny Arsenal, NJ.</p> <p>The NDCEE has positioned itself as a critical resource for the Deputy Under Secretary of Defense for Environmental Security for environmental management and technology validation and integration. Major programs supported by the Center include the Joint Group on Acquisition Pollution Prevention, Toxics Reduction Investment &amp; Management (TRIM), environmental cost accounting standards development supporting the DOD sustainment community and the DoD fuel cell program. Beginning in FY 1999, this program is restructured from PE0602720A to this PE.</p> <p><b>FY 1997 Accomplishments:</b> Program funded in PE060270A.</p> <p><b>FY 1998 Planned Program:</b> Program funded in PE0602720A.</p> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>5000 - Continue support of Army/DOD pollution prevention needs.; assist Joint Logistic Commanders in use of Joint Group for Acquisition Pollution Prevention (JG-APP) methodology to aid depots.</li> <li>- Maintain Environmental Technology Facility and continue demonstration of environmentally acceptable technologies on DOD components and conduct technology transfer activities (requirements determination, technology selection, equipment selection, installation, de-bugging, training) for DoD facilities.</li> <li>- Ensure overall DOD/Army needs are addressed in execution of reimbursable projects (DOE/EPA/others).</li> <li>- Support Pollution Prevention efforts in acquisition through development of joint test protocols, multi-service needs identification, regulatory analysis and prediction, environmental cost analyses, risk assessments, life cycle environmental assessments and incorporation of environmental management standards and principals.</li> </ul> <p>Total 5000</p>											

Project DE31

Page 11 of 12 Pages

Exhibit R-2 (PE 0708045A)

1508

Item 160

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational System Development</b>	<b>0708045A Army Industrial Preparedness Manufacturing Technology</b>	<b>DE31</b>	
<b>B. Project Change Summary</b>			
FY1998/1999 President's Budget		FY 1997	FY 1998
Appropriated Value		0	0
Adjustments to Appropriated Value		0	0
FY1999 President's Budget		0	5000
Change Summary Explanation: Funding: FY1999 - Program restructured from PE0602720A to this PE.			

Project DE31

Page 12 of 12 Pages

Exhibit R-2 (PE 0708045A)

Project DE3 I

Page 12 of 12 Pages

Exhibit R-2 (PE 0708045A)

1509

Item 160

**UNCLASSIFIED**

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998		PROJECT				
BUDGET ACTIVITY		PE NUMBER AND TITLE								
7 - Operational System Development		1001018A NATO Joint STARS								
COST (In Thousands)		FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC35	NATO Joint STARS	0	10225	6405	0	0	0	0	Continuing	Continuing
<p><b>A. Mission Description and Budget Item Justification:</b> The United States is a major participant in a cooperative venture to select and procure a ground surveillance capability for NATO forces. Initial efforts to evaluate various potential solution sets for the NATO Alliance Ground Surveillance System (NAGS) commenced in May 1995. A NAGS Project Office was established at SHAPE Technical Center (STC) and will continue to operate until the final NAGS configuration is selected. Under this PE/Project, the Army will conduct and support interoperability experimentation and demonstrations between the Joint Surveillance Target Attack Radar System (Joint STARS) Ground Station and various Allied weapon systems. This is not a new start, but a continuation of the effort previously funded under PE 0604770A. This effort is in support of upgrades for NATO International Activities and appropriately placed in Budget Activity 7.</p> <p><b>Acquisition Strategy:</b> These funds are to be used for Architectural Design Study and interoperability demonstrations with the US CGS systems involving the principle NATO participants. All hardware has been procured (FY 96).</p> <p><b>FY 1997 Accomplishments:</b> Project not funded in FY 97</p> <p><b>FY 1998 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 6377 NATO Architectural Design Study</li> <li>• 3280 Continue Support of NATO Interoperability Demonstrations and Experimentation at (NC3A)</li> <li>• 240 Program Support</li> <li>• 328 Small Business Innovative Research/Small Business Technology Transfer Programs</li> <li>Total 10225</li> </ul> <p><b>FY 1999 Planned Program:</b></p> <ul style="list-style-type: none"> <li>• 3850 Develop NATO directed interfaces and AGS Capabilities</li> <li>• 600 Complete tests and demonstrations</li> <li>• 1705 Support Allied/NATO exercises</li> <li>• 250 Program Support</li> <li>Total 6405</li> </ul>										

Project DC35

Page 1 of 3 Pages

Exhibit R-2 (PE 1001018A)

1510

Item 161

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			DC35
7 - Operational System Development		1001018A NATO Joint STARS			DC35
<b>A. Project Cost Breakdown</b>		FY 1997	FY 1998	FY 1999	
System Design/Analysis			6377	600	
Interface Development/Interoperability Demonstrations			3280	5555	
Program Management			240	250	
SBIR/STTR			328		
Total		0	10225	6405	
<b>B. Budget Acquisition History and Planning Information</b>					
<b>Performing Organizations</b>					
Contractor or	Contract				
Government	Method/Type	Award or	Performing	Total	
Performing	or Funding	Obligation	Activity	Prior to	
Activity	Vehicle	Date	EAC	FY 1997	
<b>Product Development Organizations</b>					
Motorola	CFP	Dec 95	3800	3800	3800
(96-C-S204)					
Motorola	SS/CPFF	Aug 95	4705	4533	4705
(95-C-S205)					
Motorola	SS/FP	Jan 98	12765	9485	15640
TBD					
<b>Support and Management Organizations</b>					
Project Mgmt				1167	
SBIR/STTR				240	1657
				328	328
<b>Test and Evaluation Organizations: None</b>					
<b>Government Furnished Property: None</b>					
Subtotal Product Development				8333	24145
Subtotal Support and Management				1167	1985
Subtotal Test and Evaluation					
Total Project				9500	26130
Project DC35					

Exhibit R-3 (PE 1001018A)

Page 3 of 3 Pages

Item 161

1512

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

1513

Item 161

UNCLASSIFIED

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

PRINT

ADDRESS

1	USD (Policy), Pentagon, Room 4B926, Washington, DC 20301-2100
1	DOD Compt, MS, DMI, Pentagon, Room 1B728, Washington, DC 20301-1100
1	OSD, ATTN: DOT&E, Pentagon, Room 3E318, Washington, DC 20301
11	ASD(C3I), Pentagon, Room 3E209, Washington, DC 20301
1	ASD(ISA), Pentagon, Room 4B938, Washington, DC 20301
1	ASD(LA), Pentagon, Room 3D918, Washington, DC 20301
1	USD(P&R), Room 3C980, Washington, DC 20301-4000
1	ASD(PA&E)/GPP/LFD, Pentagon, Room 2B256, Washington, DC 20301
1	ASD (PA&E), Pentagon, Room 2E313, Washington, DC 20301
2	ASD(PA), Pentagon, Room 2D278, Washington, DC 20301
2	JCS(J-8), Pentagon, Room 1E963, Washington, DC 20301
1	HQDA, (SAUS-OR), Pentagon, Room 2E600, Washington, DC 20310
*	HQDA (SAILE), Pentagon, Room 2E614, Washington, DC 20310
*	HQDA (SARD-DEP), Pentagon, Room 2E673, Washington, DC 20310
*	HQDA (SAFM-CAZ-A), 5611 Columbia Pike, Falls Church, VA 22041-5050
*	HQDA (SFIS-API), Hoffman 1, Room 1012, Alexandria, VA 22331-0302
*	HQDA (DACS-DPD), Pentagon, Room 3C738, Washington, DC 20310
*	HQDA (DACS-DPA), Pentagon, Room 1C460, Washington, DC 20310
*	HQDA (SAIS-PPG), Pentagon, Room 1D679, Washington, DC 20310
*	HQDA (DACS-DPA), Pentagon, Room 3C747, Washington, DC 20310
*	HQDA (DACS-DMC), Pentagon, Room 3D631, Washington, DC 20310
1	HQDA (DACS-TE), Pentagon, Room 3C571, Washington, DC 20310
*	HQDA (DAIM-ZR), Pentagon, Room 2B683, Washington, DC 20310

\*Distributed electronically

UNCLASSIFIED



UNCLASSIFIED

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

PRINT

ADDRESS

* 1	HQDA (DAMI-ZXM), Pentagon, Room 2D474, Washington, DC 20310
* 1	HQDA (DAMI-PBB), Pentagon, Room 2E477, Washington, DC 20310
*	HQDA (DAPE-ZXO), Pentagon, Room 2D735, Washington, DC 20310
*	HQDA (DALO-RMP), Pentagon, Room 1E565, Washington, DC 20310
*	HQDA (DALO-ZA), Pentagon, Room 3E560, Washington, DC 20310
*	HQDA (DAMO-ZR), Pentagon, Room 3D526, Washington, DC 20310
*	HQDA (DAMO-FDR), Pentagon, Room 2D570, Washington, DC 20310
*	HQDA (DAAR-CO), Pentagon, Room 1D432, Washington, DC 20310
*	HQDA (NGB-ZA), Pentagon, Room 2E394, Washington, DC 20310
*	HQDA (DASG-ZA), 5111 Leesburg Pike, Room 638, Falls Church, VA 22041-3258
*	HQDA (DASG-RMZ), 5111 Leesburg Pike, Room 554, Falls Church, VA 22041-3258
*	HQDA (DASG-RDZ), Pentagon, Room 3E368, Washington, DC 20310-2300
*	HQDA (DAIM-ED), Pentagon, Room 1E682, Washington, DC 20310
*	HQDA (DAIM) Pentagon, Room 1E665, Washington, DC 20310
*	HQDA (SAPA), Pentagon, Room 2E641, Washington, DC 20310
*	HQDA (CSSD-RM-W), P.O. Box 15280, Arlington, VA 22215-0150
*	HQDA (SAAG-PRP), Room 1309, 3101 Park Center Drive, Alexandria, VA 22302-1596
*	HQDA (DAMH-ZB), Pulaski Bldg, Room 4229, 20 Massachusetts Avenue, Washington, DC 20314
*	US Army Cost And Economic Analysis Center, ATTN: SFFM-CA-PI, 5611 Columbia Pike, Falls Church, VA 22041-5050
1	BMDO/RM, Pentagon, Room 1E1037, Washington, DC 20310
*	HQDA (JDRS-PBD), Pentagon, Room 1E610, Washington, DC 20310
*	HQ, PACOM, R&D Requirements (J531), BOX 15, USPACOM Staff, Camp H.M. Smith, HI, 96861
*	Commander, US Army Intelligence and Security Command, ATTN: IARM-PB, Fort Belvoir, VA 22060-5370

\*Distributed electronically

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

PRINT

ADDRESS

\* Commander, US Army Nuclear and Chemical Agency, ATTN: MONA-OPS, Bldg 2073, Backlick Road, Springfield, VA 22150  
\* Commander, US Army Medical R&D Command, ATTN: SGRD-RMC, Fort Detrick, Frederick, MD 21701-5012  
\* Commander, US Army Medical R&D Command, ATTN: SGRD-PR, Fort Detrick, Frederick, MD 21701-5012  
\* Commander, US Army Training and Doctrine Command, ATTN: ATCD-E, Fort Monroe, VA 23651-5000  
\* CMDT, Army Field Artillery School, ATTN: ATSF-CSI-P, ATSF-CBL, Ft. Sill, OK 73503-5600  
\* CDR, Army Aviation Ctr & Ft. Rucker, ATTN: ATZS-CDI, Ft. Rucker, AL 36362-5000  
\* CDR, Army Intelligence Ctr and Ft. Huachuca, ATTN: ATZS-CDI-I, ATZS-CDT, Ft. Huachuca, AZ 85613-7000  
\* CMDT, U.S. Army Signal Ctr, ATTN: ATZH-CDM, ATZH-BLT, Ft. Gordon, GA 30905-5000  
\* Force Design Directorate, ATTN: ATCD-F, 415 Sherman Ave., Ft. Leavenworth, KS 66027-5000  
\* CDR, USACHCS, ATTN: ATSC-CD, Ft. Monmouth, NJ 07703-5612  
\* CDR, U.S. Army Medical Center & School, ATTN: HSMC-FCM, Ft. Sam Houston, TX 78234  
\* CMDT, U.S. Army Air Defense Artillery School, ATTN: ATSA-CDM, Ft. Bliss, TX 79916  
\* CMDT, U.S. Army Infantry School, ATTN: ATSH-IWC, ATSH-MLS, Ft. Benning, GA 31905-5400  
\* CMDT, U.S. Army Armor School, ATTN: ATZK-CD-ML, ATZK-MW, Ft. Knox, KY 40121-5200  
\* CMDT, U.S. Army Engineer School, ATTN: ATSE-CD-M, Ft. Leonard Wood, MO 65473-5000  
\* CMDT, U.S. Army Chemical School, ATTN: ATZN-CM-CS, Ft. McClellan, AL 36205-5020  
\* CMDT, U.S. Army Military Police School, ATTN: ATZN-MP-CM, Ft. McClellan, AL 36205-5020  
\* Commander, US Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-MB, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600  
\* Commander, US Army Operational Test and Evaluation Command, ATTN: CSTE-RMZ, Park Center IV, 4501 Ford Avenue, Alexandria, VA 22302-1458  
\* Commander, US Army Materiel Command, ATTN: AMCRD-AB, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001  
\* Commander, US Army Materiel Command, ATTN: AMCAE-P, 5001 Eisenhower Avenue, Alexandria, VA 22333  
\* Commander, US Army Materiel Command, ATTN: AMCAQ-B-TILO, 5001 Eisenhower Avenue, Alexandria, VA 22333

\*Distributed electronically

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

PRINT

ADDRESS

\* Commander, US Army Communications-Electronics Command, ATTN: AMSEL-CG, Ft. Monmouth, NJ 07703-5000  
\* Commander, US Army Communication-Electronics Command, ATTN: AMSEL-ACSB-BT, Ft. Monmouth, NJ 07703-5008  
\* Commander, US Army Missile Command, ATTN: AMSMI-AS (Library), Bldg 5250, RMC-147, Redstone Arsenal, AL 35898-5000  
\* Commander, US Army Test and Evaluation Command, ATTN: AMSTE-RM, Aberdeen Proving Ground, MD 21005-5055  
\* Commander, US Army CECOM, Technical Industrial Liaison Office, ATTN: AMSEL-AC-SP-BL (Sandra Vermont), Ft. Monmouth, NJ 07703-5008  
\* Commander, US Army Tank-Automotive Command, ATTN: AMSTA-CG, Warren, MI 48397-5000  
\* Commander, US Army Laboratory Command, ATTN: AMSLC-CG, Adelphi, MD 20783-1145  
\* Commander, US Army Armament Research, Development and Engineering Center, ATTN: SMCAR-CO, Dover, NJ 07806-5000  
\* Commander, Environmental Center, ATTN: SFIM-AEC-RM, Edgewood Area, Aberdeen Proving Ground, MD 21010-5055  
\* Commander, US Army Materiel Systems Analysis Activity, ATTN: AMXSY-PB, Aberdeen Proving Ground, MD 21005-5071  
\* Commander, US Army Chemical and Defense Command, ATTN: AMSCB-RR, Aberdeen Proving Ground, MD 21010-5423  
\* Commander, US Army Chemical, Biological and Defense Command, ATTN: SCBRD-ASA, Aberdeen Proving Ground, MD 21010-5423  
\* Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-EO, Aberdeen Proving Ground, MD 21010-5423  
\* Commander, US Army Aviation and Troop Command, ATTN: AMSAT-D-C, 4300 Goodfellow Blvd, St. Louis, MO 63120-1798  
\* Program Manager, Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS, 12350 Research Parkway, Orlando, FL 32826  
\* Program Manager, Tank Main Armament Systems, ATTN: AMCPM-TMD PMD, Picatinny Arsenal NJ 07806-5000  
\* Program Executive Officer, Missile Defense, ATTN: SFAE-MD-DP-P, Building 5250, Redstone Arsenal, Alabama 35898-5750  
\* Program Executive Officer, Field Artillery Systems, ATTN: SFAE-FAS, Building 171, Picatinny Arsenal, Picatinny, NJ 07806-5000  
\* Program Executive Officer, Armored Systems Modernization, ATTN: SFAE-HFM-P, Warren, MI 48397-5000  
\* Program Executive Officer, Aviation, ATTN: SFAE-AV, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798  
\* Program Executive Officer, Tactical Wheeled Vehicles, ATTN: SFAE-TWV, Warren, MI 48397-5000  
\* Program Executive Officer, Command and Control Systems, ATTN: SFAE-CC-PMO, Ft. Monmouth, NJ 07703-5000

\*Distributed electronically

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

PRINT

ADDRESS

*	Program Executive Officer, Communication Systems, ATTN: SFAE-COM, Ft. Monmouth, NJ 07703-5000
*	Program Executive Officer, Tactical Missiles, ATTN: SFAE-MSL, Redstone Arsenal, AL 35898-8000
*	Program Executive Officer, Intelligence and Electronic Warfare, ATTN: SFAE-IEW-BM, Ft. Monmouth, NJ 07703
*	Commander, US Army Space and Strategic Defense Command, ATTN: CSSD-RM-BP, P.O. Box 1500, Huntsville, AL 35807-3801
*	Commander, US Army Corps of Engineers, ATTN: CERD-L, Washington, DC 20314
*	Commander, US Army Force Integration Support Agency, ATTN: MOFI-TRED-O, Building 2588, Fort Belvoir, VA 22060-5587
*	Commander, 902d MI Group, ATTN: IAGPA-OPOP, Ft. Meade, MD 20755-5910
*	Commander, HQ US Army Missile & Space Intelligence Center, ATTN: AIAMS-YCC, Redstone Arsenal, AL 35898-5000
*	Commander, US Army Countermeasures/Counter Measures Center, ATTN: AMX-CM-RF, 2800 Powder Mill Rd, Adelphi, MD 2078
*	Commander, US Army Belvoir Research, Development & Engineering Center, ATTN: STRBE-Z, Ft. Belvoir, VA 22060-5606
*	Commander, US Army Research Office, ATTN: SLCRO-AO (Security Officer), P.O. Box 12211, Research Triangle Park, NC 27709
3	Executive Office of the President, Office of Management and Budget, National Security Division, NEOB, Room 10001, Washington, DC 20503
1	Inspector General, ATTN: A&IM/FMD, 400 Army-Navy Drive Arlington, VA 22202-2884
14	US General Accounting Office, ATTN: NSIAD, Room 4103, 441 G Street, NW, Washington, DC 20548
*	HQ USAF/FMBMC, Pentagon, Room 5C129, Washington, DC 20330-5012
*	HQ US Marine Corps, Deputy Chief of Staff for RD&S, Code (MC-RDP-30), Washington, DC 20380
*	Commandant, US Army War College, ATTN: Library, Carlisle Barracks, PA 17013-5050
1	Defense Advanced Research Projects Agency, ATTN: Comptroller, 3701 North Fairfax Drive, Arlington, VA 22203-1714
*	Institute for Defense Analyses, 1801 North Beauregard Street, Alexandria, VA 22311
*	Headquarters, National Aeronautical and Space Administration, Code ID, ATTN: Deputy DOD Affairs, Washington, DC 20546
1	Library of Congress, Rm. LM-208 (202), ATTN: Bruce Krafte, James Madison Library Bldg., 1st Street & Independence Avenue, SE, Washington, DC 20540

\*Distributed electronically

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

PRINT

ADDRESS

1	ACDA/NWC/DPA, Room 5741, 320 21st Street, NW, Washington, DC 20451
2	Pentagon Library, ATTN: Army Studies, Room 1A518, Washington, DC 20310
*	Director, Defense Finance and Accounting Service-Indianapolis Center, ATTN: DFAS-I-PA, Indianapolis, IN 46249
1	Defense Technical Information Center (DTIC), ATTN: Ms. Mawby, Ft. Belvoir Headquarters Complex (FBHC), Suite 0944 8725 John J. Kingman Road, , Ft. Belvoir, VA 22060-6220
1	Defense Technical Information Center (DTIC), ATTN: OCC, Ft. Belvoir Headquarters Complex (FBHC), Suite 0928, 8725 John J. Kingman Road, Ft. Belvoir, VA 22060-6220
11	National Technical Information Service (NTIS), ATTN: Military Publications, 5285 Port Royal Road, Springfield, VA 22161

HAND DELIVERY

1	DOD(C)(P&S), Room 3A862
3	DOD(C)(INV), Room 4B916
1	DOD(C)(MILCON), Room 3D841
2	DOD(C)(CFO), Room 1B728
27	USD(A) Mailroom, Room 3D139
13	SAFM-BUL, Room 3A652
3	SAFM-BUC-F, Room 3B663
*	SAFM-BUC-I, Room 3A674
*	SAFM-RB, Room 3A720
34	SALL, Room 2C638
16	SAFM-BUI-A, Room 3D400
1	SAFM-BUI-W, Room 3D400

\*Distributed electronically

UNCLASSIFIED

UNCLASSIFIED

APPENDIX A

RDTE CONGRESSIONAL DESCRIPTIVE SUMMARIES  
MAILING LIST

<u>PRINT</u>	<u>ADDRESS</u>
--------------	----------------

HAND DELIVERY (continued)

1	SAFM-BUI-O, Room 3D400
1	SARD-TS, Room 3D400

166	Total Print
-----	-------------

Any changes to this distribution list should be provided to HQDA (SAFM-BUL-A), Washington, DC 20310, DSN, 223-2687..

\*Distributed electronically

UNCLASSIFIED